Screening Site Inspection

for

Jensen Drive Drive Site

Houston, Harris County, Texas

TXD987966900

Prepared By

Jairo Guevara, FIT Chemical Engineer

Region VI

Ecology and Environment, Inc.

November 16, 1989

PREFACE

This Screening Site Inspection (SSI) was prepared by Ecology and Environment, Inc. for the Environmental Protection Agency under Contract Number 68-01-7347 as part of an EPA Headquarters Test Study.

1. INTRODUCTION

The Ecology and Environment, Inc. (E & E) Region VI Field Investigation Team (FIT) was tasked by the U. S. Environmental Protection Agency (EPA) under Technical Directive Document (TDD) F-06-8905-68 to conduct the Screening Site Inspection (SSI) of the Jensen Drive Drum site in Houston, Harris County, Texas.

1.1 SCREENING SITE INSPECTION OBJECTIVES

The SSI evaluates the potential risks associated with hazardous waste generation, storage and disposal at the site. It expands upon data collected during the Preliminary Assessment (PA) and identifies data gaps. Information obtained during the SSI supports the management decision of whether the site proceeds to the Listing Site Inspection (LSI) or receives the classification of No Further Action under SARA.

The on-site reconnaissance inspection and new information from the EPA site clean-up were used to complete the investigation of the site before a decision was made regarding the necessity of a sampling inspection.

1.2 SITE DESCRIPTION AND HISTORY

The Jensen Drive Drum site is located at 3116 Jensen Drive Northeast, Houston, Texas 77026 (Reference 1, Pages 3 and 32). The geographic coordinates are 29°47′25" north latitude and 95°20′29" west longitude (Reference 2 and Figure 1). The property is under the name of Leas-It, Inc., which is owned by Ronald J. Gray of Lufkin, Texas (home telephone: (b) (6) work telephone: 409/829-2282). The site encompasses 1.465 acres, approximately 400 feet wide by 150 feet long, and is located in a light industrial and residential area (Reference 2 and Figure 2). Mr. Gray apparently leased his land to Mr. Fred Winston, (b) (6) Mr. Winston operated a company known as May Cooperage, Inc. on the leased property. A small warehouse facility with an office was located at the center of the site (Figure 2).

The site was bought by Leas-It, Inc. from the Texas Bank and Trust Company of Houston on April 28, 1982 (Reference 3). May Cooperage, Inc. operated at the site location from 1985 or 1986 to 1988 (Reference 4). Before 1985, the site was used by a mattress factory and a heavy machinery business (Reference 20). The company was moved to the Jensen Drive site from its former location at 1705 Davis Street after the Texas Water Commission (TWC) and the City of Houston filed complaints against the Davis Street site operation (Reference 1, Page 4). The site is presently for sale (Photograph 10). No other information about the history or past operations of the site was available.

SITE OPERATIONS

May Cooperage, Inc. operated a drum reclamation business on-site. The site was inspected by the Technical Assistance Team (TAT) in August 1988 (Reference 1, Page 4). During that inspection, more than 400 drums were found on-site. Liquid wastes were found in 210 drums (Reference 4).

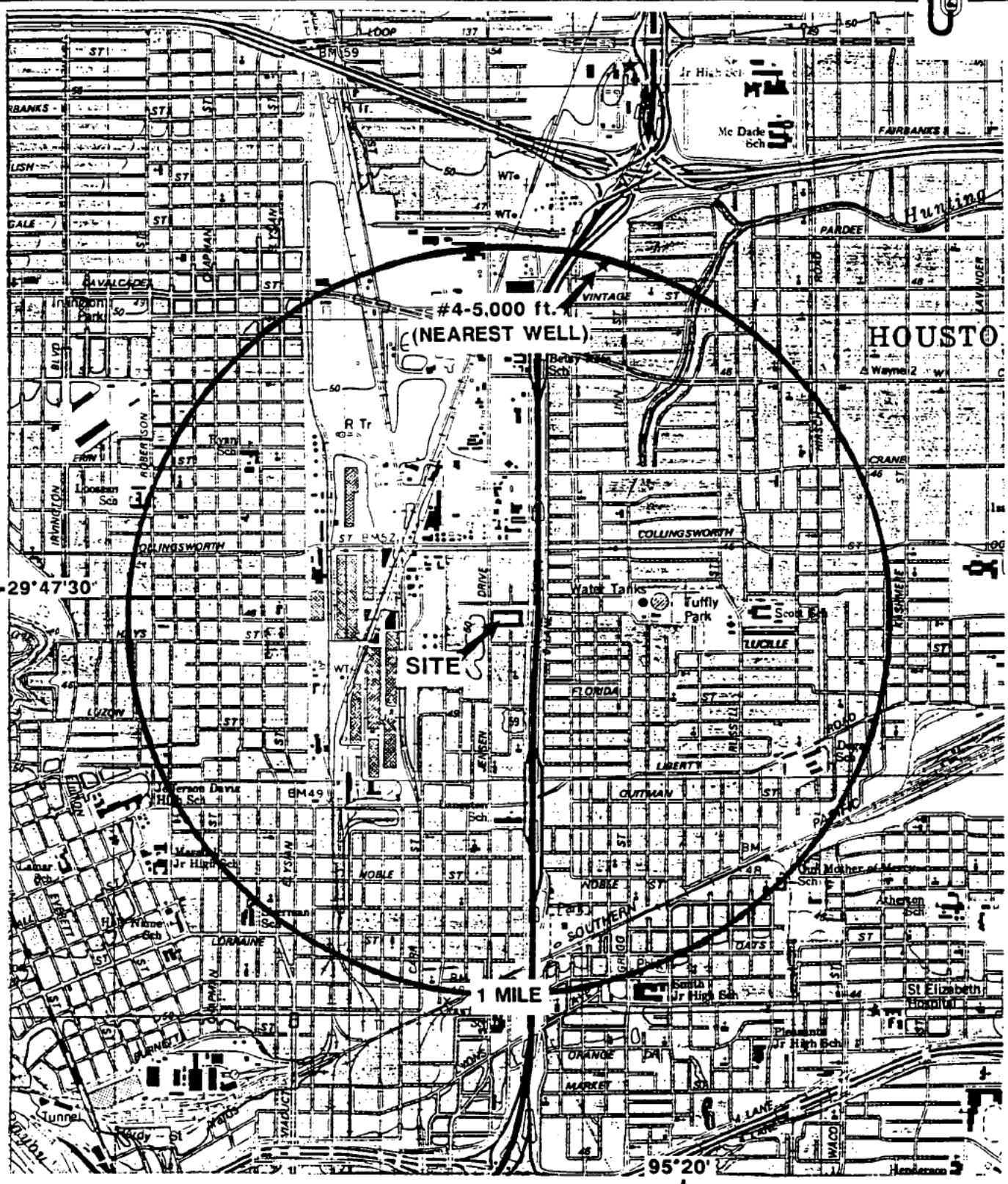
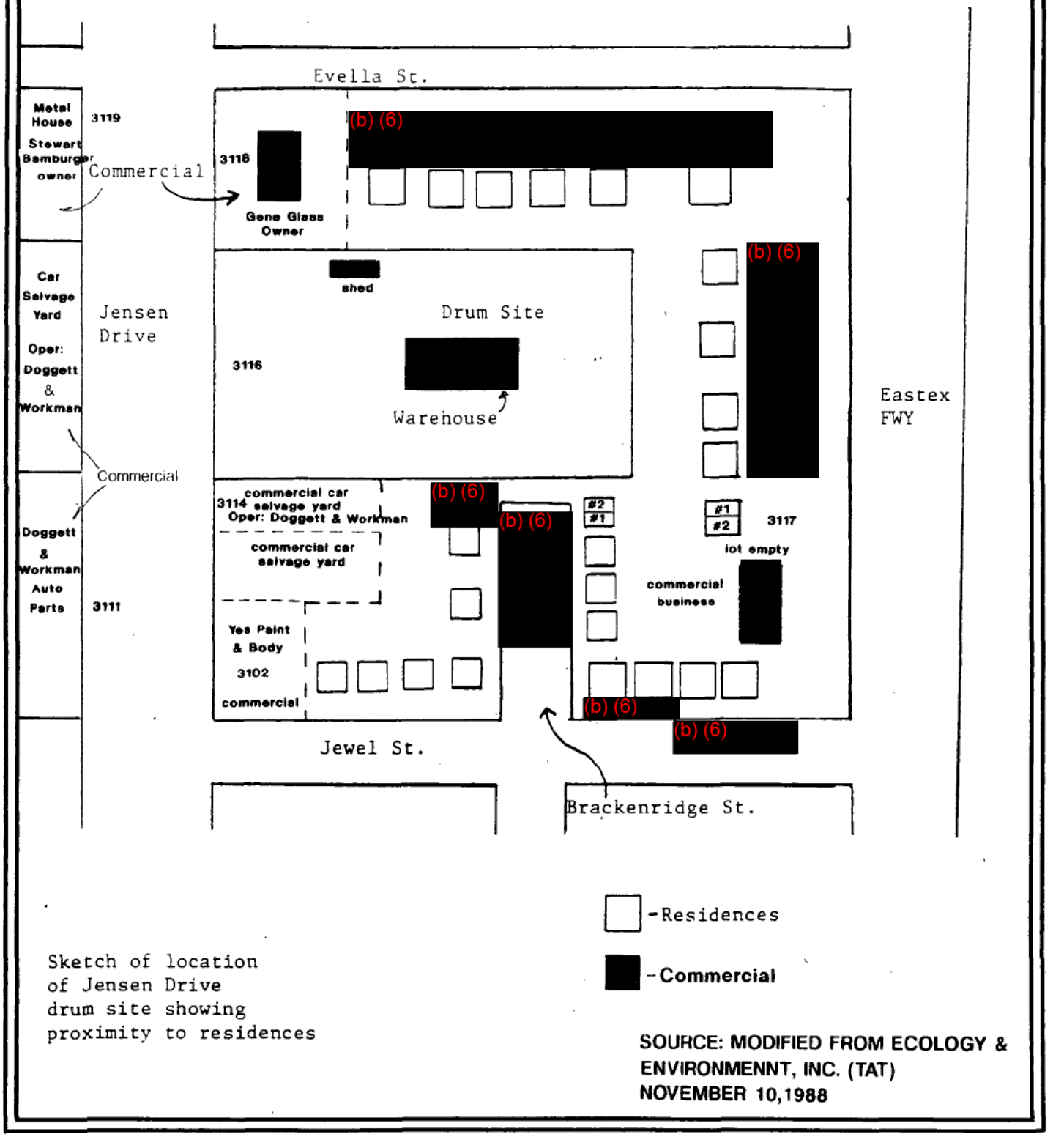


FIGURE 1
SITE LOCATION MAP
JENSEN DRIVE DRUM SITE
HOUSTON, TEXAS
TXD987966900



Sketch of location of Jensen Drive drum site showing proximity to residences

SOURCE: MODIFIED FROM ECOLOGY & ENVIRONMENNT, INC. (TAT) NOVEMBER 10,1988

N

NOT TO SCALE

FIGURE 2
SITE NEIGHBORHOOD AREA SKETCH
JENSEN DRIVE DRUM SITE
HOUSTON, TEXAS
TXD987966900

The other drums were empty. It is not known if the empty drums were empty when they were brought to the site. The drums were in various stages of deterioration. Several drums with wastes were overturned and some were bulging. Incompatible wastes were placed adjacently. The site warehouse contained 91 steel drums, 20 fiberboard drums, 10 compressed gas cylinders and a 500 gallon polypropylene vat (half full). A locked office in the warehouse contained 10 five gallon cans (Reference 1, Pages 3, 49 through 53).

The site vegetation consisted of grass and weeds. Stressed vegetation was seen in various areas. Two large areas of discolored soil were observed during the TAT inspection. These areas were located to the northeast and southeast corners of the site (Reference 12, Pages 3, 4 15, 23 and 24; Figure 3). Several vehicles from a neighboring business, Doggett and Workman Auto Parts, were located on-site (Reference 1, Pages 3a and 18).

The removal of drums and contaminated soil to permitted disposal facilities was completed by the TAT on April 21, 1989 (Reference 21). All vehicles from the site were also removed (Reference 20).

WASTE HANDLING AND DISPOSAL PRACTICES

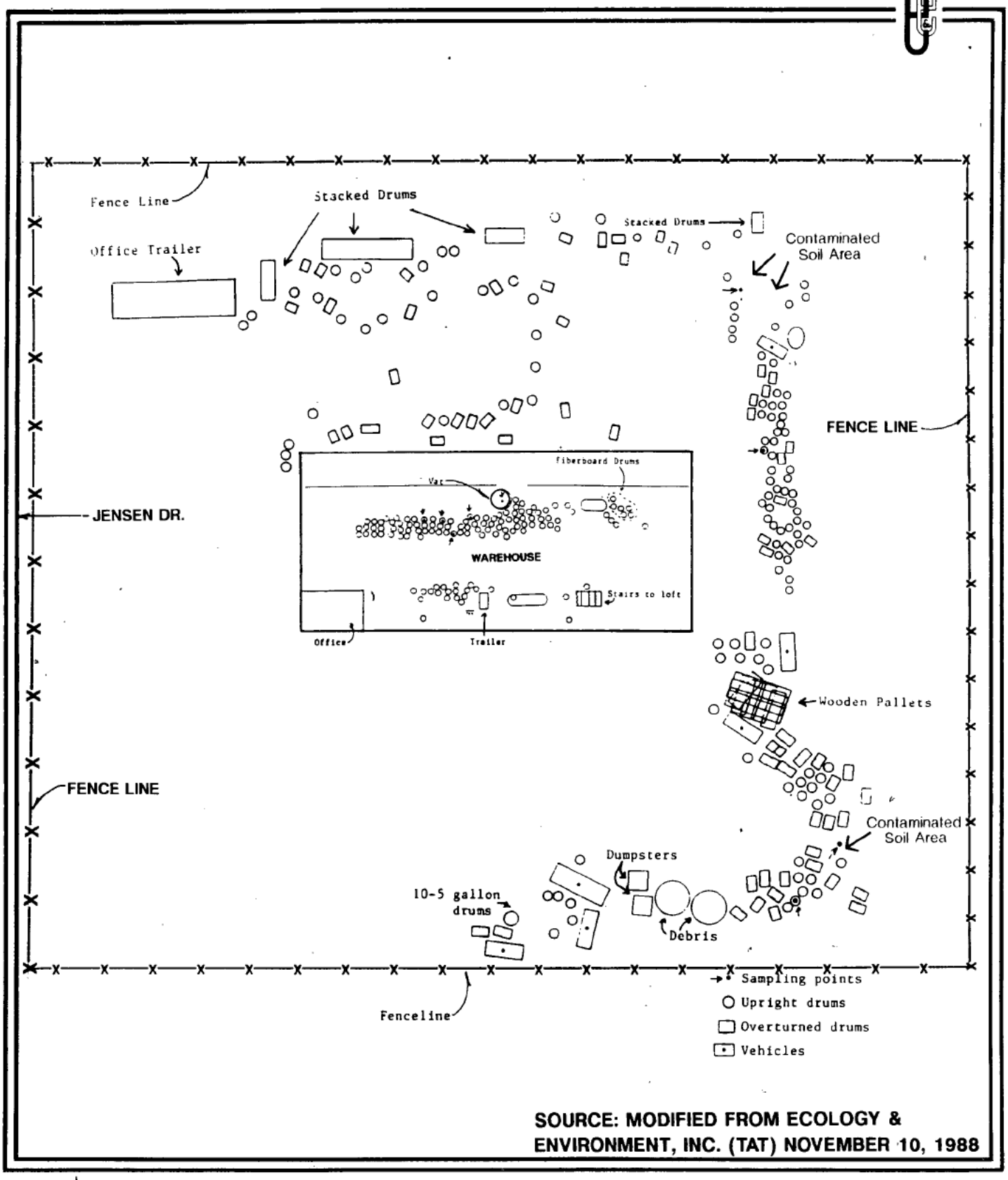
During the August 1988 TAT inspection, nine samples (six from drums, one from the plastic vat and two from the large contaminated soil areas) were collected and analyzed for metals and base/neutral/acid (BNA) organics. The analyses revealed the presence of several metals and organics: antimony, chromium, cobalt, copper, iron, lead, potassium, sodium, polynuclear aromatics, 2,4-dimethyl phenol, phthalates, benzoic acid and several unknown hydrocarbons (Reference 1, Pages 4, 7-10, 15-17 and 60-98). The site was resampled as part of the EPA emergency remedial action in December 1988 and from March through April 1989. The results of these analyses were similar to those of the August 1988 analysis.

The waste handling on-site was inadequate. Details of the internal site operations concerning the wastes are not known. Fourteen potentially responsible companies which originated the wastes have been identified by the EPA (Reference 21).

1.2 SUMMARY OF PRELIMINARY ASSESSMENT

The site apparently received all kinds of wastes in drums. Incompatible wastes were stored indiscriminantly, creating potential reactions and hazardous releases. Operations of the site had been abandoned at the time of the TAT inspection in August 1988. Drums were in disarray and had deteriorated. Soil in two east areas of the site were contaminated. Several abandoned and usable vehicles were noticed on-site. Release of contaminants to the atmosphere was measured by the TAT during the August, 1988 inspection.

At the time of the FIT PA, the site was undergoing an EPA emergency cleanup. The drums with wastes, after being sampled, were repacked and



SOURCE: MODIFIED FROM ECOLOGY & ENVIRONMENT, INC. (TAT) NOVEMBER 10, 1988

N

NOT TO SCALE

FIGURE 3
SITE SKETCH
JENSEN DRIVE DRUM SITE
HOUSTON, TEXAS
TXD987966900

moved into the site warehouse. Removal of the drums and soil was pending the receipt of analytical results from the EPA contracted laboratories (Reference 22).

DATA COLLECTION

An on-site reconnaissance inspection was conducted by the FIT (Jairo Guevara and Jim Trusley) on September 12 and 14, 1989. There were no representatives from the site accompanying the FIT during the inspection.

The FIT interviewed Mr. Charles Lee of the Doggett and Workman Auto Parts store, located in front of the site (3111 Jensen Drive) and Mr. Stewart Bamburger of the metal house located across from the site (3119 Jensen Drive). The site is presently used by the Doggett and Workman Auto Parts to store vehicles and vehicle body parts. Mr. Bamburger is presently storing empty drums and other metal and plastic containers on the site property. The FIT also interviewed the following neighbors who operate commercial businesses or live in the same block on which the site is located:

a) (b) (6)
b)
c)
d)
e)
f) (b) (6) of Metal Scrap, a business adjacent to the metal house on the north side.

The site presently stays open during the day. Personnel from Doggett and Workman possess the site gate key. Before the EPA cleanup action, the site was secured on all four sides by a five foot fence (Reference 1, Page 3). A part of the site on the northeast side had only a three foot fence which was broken and very fragile. This part has been replaced. The fence surrounding the site was increased from five to seven feet, and the three foot gate was replaced by a 10 foot gate during the cleanup operation (Reference 21).

SOURCE TYPE DESCRIPTIONS/SOURCE SIZES/SOURCE CONTAINMENT

The waste sources were the 210 drums with liquid contents stored on-site in complete disarray. Most of the drums were outdoors and some were overturned. A warehouse building contained drums, cans and a 500 gallon propylene vat approximately half full. Several cars, trucks and trailers were abandoned on-site (Reference 1, Page 3).

The EPA emergency site cleanup was completed in April 1989. All of the drums, cans and the 500 gallon vat were removed to off-site proper disposal facilities. Contaminated soil on the east part of the site was stabilized and removed to the depth of the underlying clay layer. 123 tons of contaminated soil were removed and 190 yards of fill dirt were used to level the excavated area (Reference 21).

The following table describes the three soil samples collected in the remediated area before and after excavation. Lead, reported in mg/kg, was one of the main contaminants.

	NE Area	Center Area	SE Area
Before Excavation	287	756	97.9
Sample Number	65	64	63
After Excavation	32.2 (as is basis)	109	253
Sample Number	67	68	66

As indicated, the values decreased after excavation, with exception of the southeast area sample (Reference 23; Reference 24).

All of the abandoned vehicles were crushed and properly disposed or removed from the site (Reference 24). As a result, the site was completely emptied and cleaned.

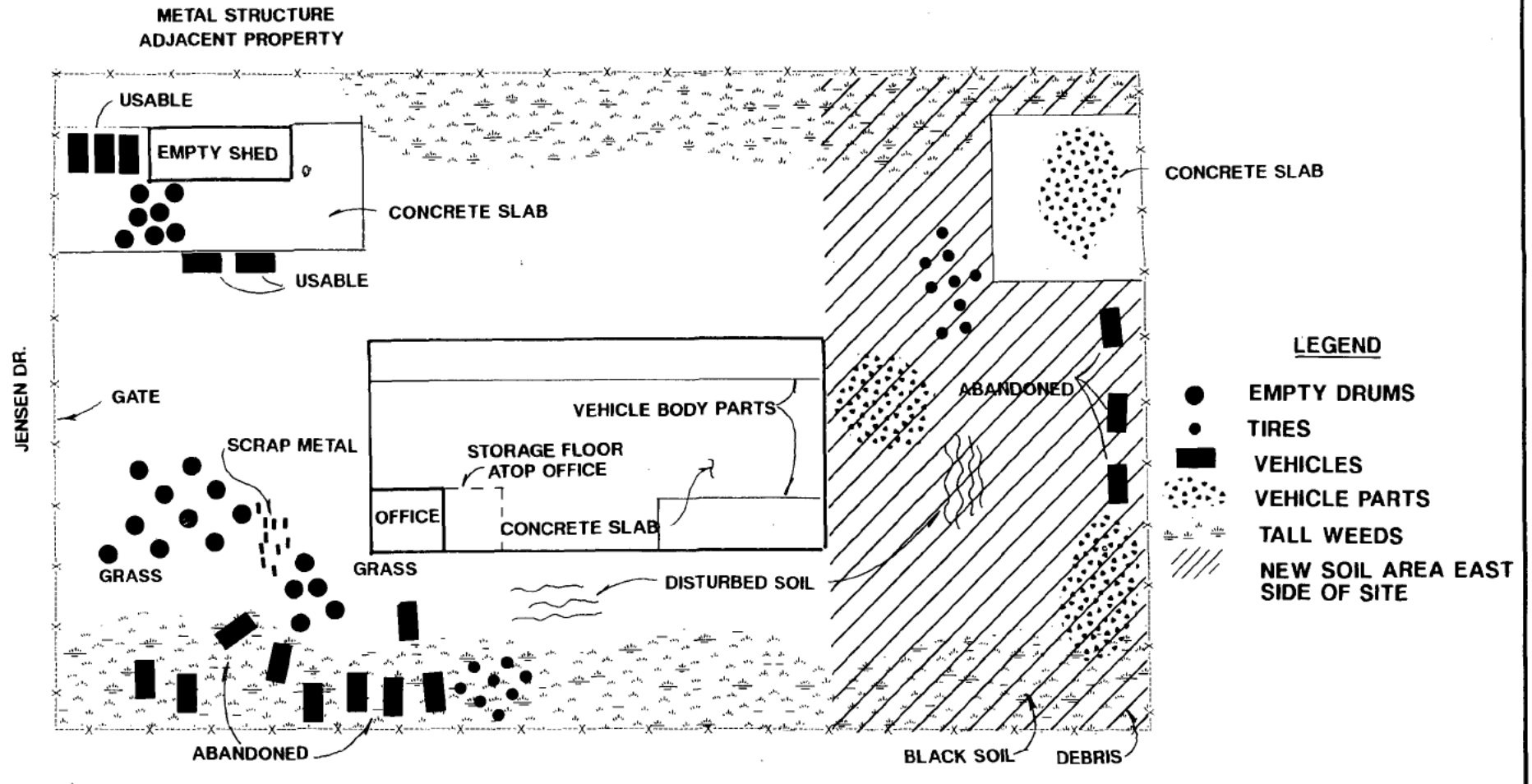
The condition of the site during the FIT reconnaissance inspection is illustrated on Figure 4. Empty metal drums, empty metal dumpsters, plastic bin lids, abandoned and usable vehicles and vehicle body parts were seen on-site. High weeds were seen during the inspection in many areas of the site. Grass planted during the cleanup operation was also seen (Photographs 1 through 10).

The site sketch of neighboring houses and businesses is presented on Figure 2.

TARGET POPULATION

Houston water supply in the northeast area is served by a combination of ground water and surface water. Five city water supply wells are located within three miles of the site (Figure 5). Domestic surface water comes from Lakes Houston (17 miles north of downtown Houston), Conroe and Livingston (Reference 13; Reference 14). The population served by the municipal water supply within four miles of the site was estimated at 237,469 (Reference 15).

The site is located in the middle of the city, with adjacent residential and industrial areas (Reference 1, Pages 3-12 and 13). Small drainage paths from the site, in the yards of houses located east-northeast and northwest of the site, were noticed during the FIT reconnaissance inspection. Healthy grass was seen in all of these yards. No environmentally sensitive areas exist within four miles of the site or within 15 miles downstream of the site (Reference 16).



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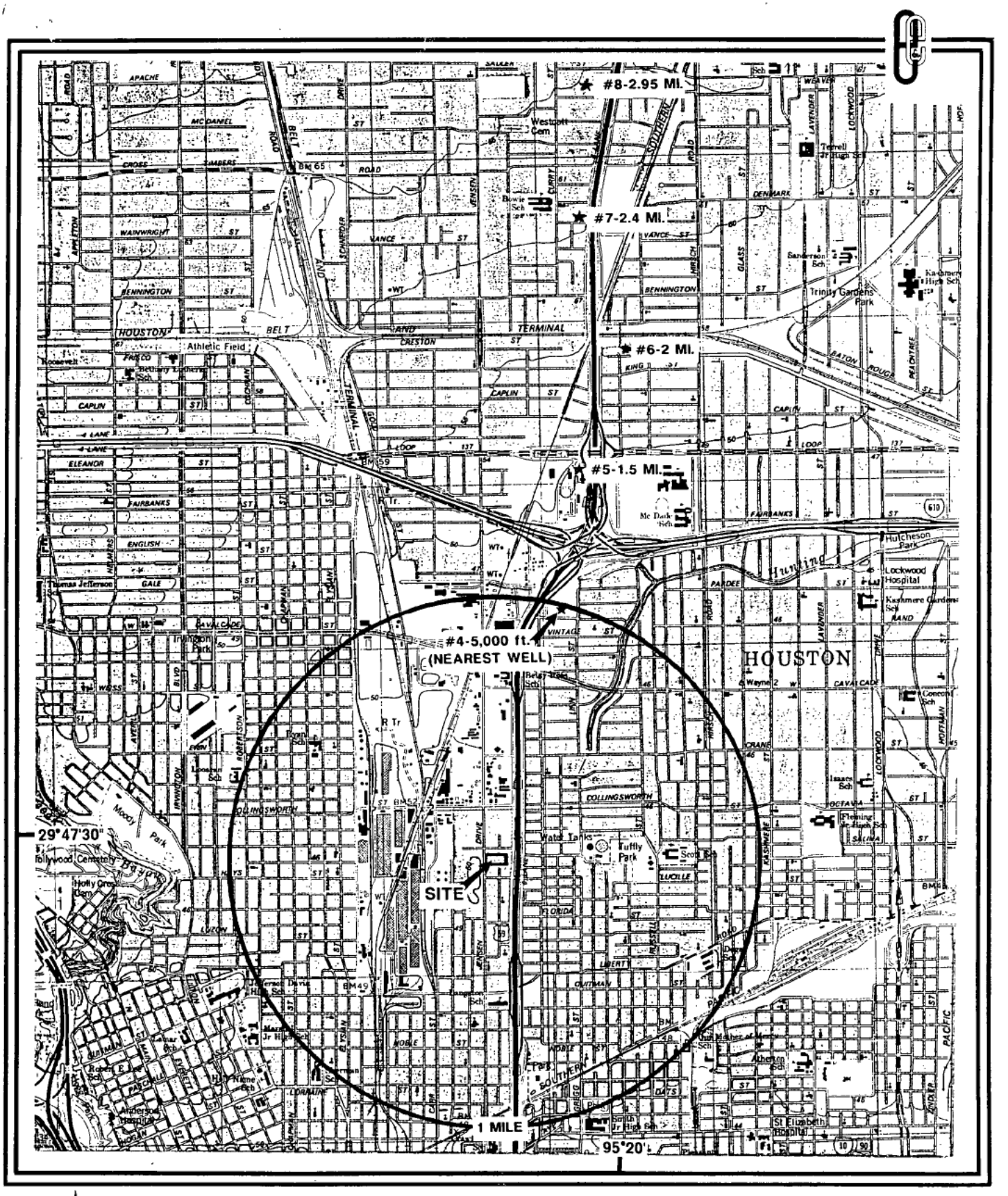
NOT TO SCALE

FIGURE 4
CONDITION OF SITE DURING FIT INSPECTION (9/12-14/89)
JENSEN DRIVE DRUM SITE
HOUSTON, TEXAS
TXD987966900



0 N 2668 ft.

FIGURE 5
CITY OF HOUSTON NORTHEAST WELLS
JENSEN DRIVE DRUM SITE
HOUSTON, TEXAS
TXD987966900

No release of vapors was detected during the FIT reconnaissance inspection, when the site was surveyed with an HNu photoionizer.

HEALTH AND SAFETY CONCERNS

No evident health hazard existed after the EPA emergency cleanup. The empty drums, which are presently stored on-site and were noted during the reconnaissance inspection, are mainly from food companies. A few empty industrial drums were seen on-site, but they were cleaned.

CONCLUSION

Having inspected both the site and neighboring properties, the FIT does not believe that any imminent hazard to the environment or neighboring population exists. Mr. Peter Sam, EPA Superfund Site Manager, decided on September 20, 1989 against sampling of this facility (Reference 25).

Table 1
Inorganic Analysis Results from Drum Sample Jensen Drive Site, With
laboratory numbers 8TFAKC46 01 through 10
Results Reported in ug/L

Element	01	02	05	06	08	09	10	Drinking Water Std
Aluminum			722		203	279	2480	-
Antimony	520	356						-
Barium		122	144	74			153	1
Beryllium					50	67		11*
Cadmium	18							10
Calcium		52900	1610	14300	1800	3320	2400	-
Chromium		106	264				39	50
Cobalt		1800	3190					-
Copper	388	88	9760	50			162	1000
Iron	83	20700	7960	9460	440000	494000	1050	300
Lead		269	57300			133	129	50
Magnesium		424000	8150	1150			1940	-
Manganese		2990	132	95	5820	6000	46	50
Nickel		52	50					-
Potassium		20100		5130			16600000	-
Sodium		124000	2310	26800	5660	6060	3140000	-
Zinc	661	448	1770	302	72	144	177	5000*

- No EPA drinking water standard.

* Suggested criterion for drinking water, there is no EPA drinking water standard.

Table 2
Inorganic Analysis Results From Soil Samples At Jensen Drum Site With
laboratory numbers 8TFAKC46 03 and 04

Results Reported in mg/kg

Element	03	04
Antimony	13	
Barium	182	117
Beryllium	3	1
Cadmium	1	1
Chromium	17	8
Cobalt	4	2
Copper	34	18
Lead	158	127
Mercury		0.4
Nickel	17	5
Zinc	381	333

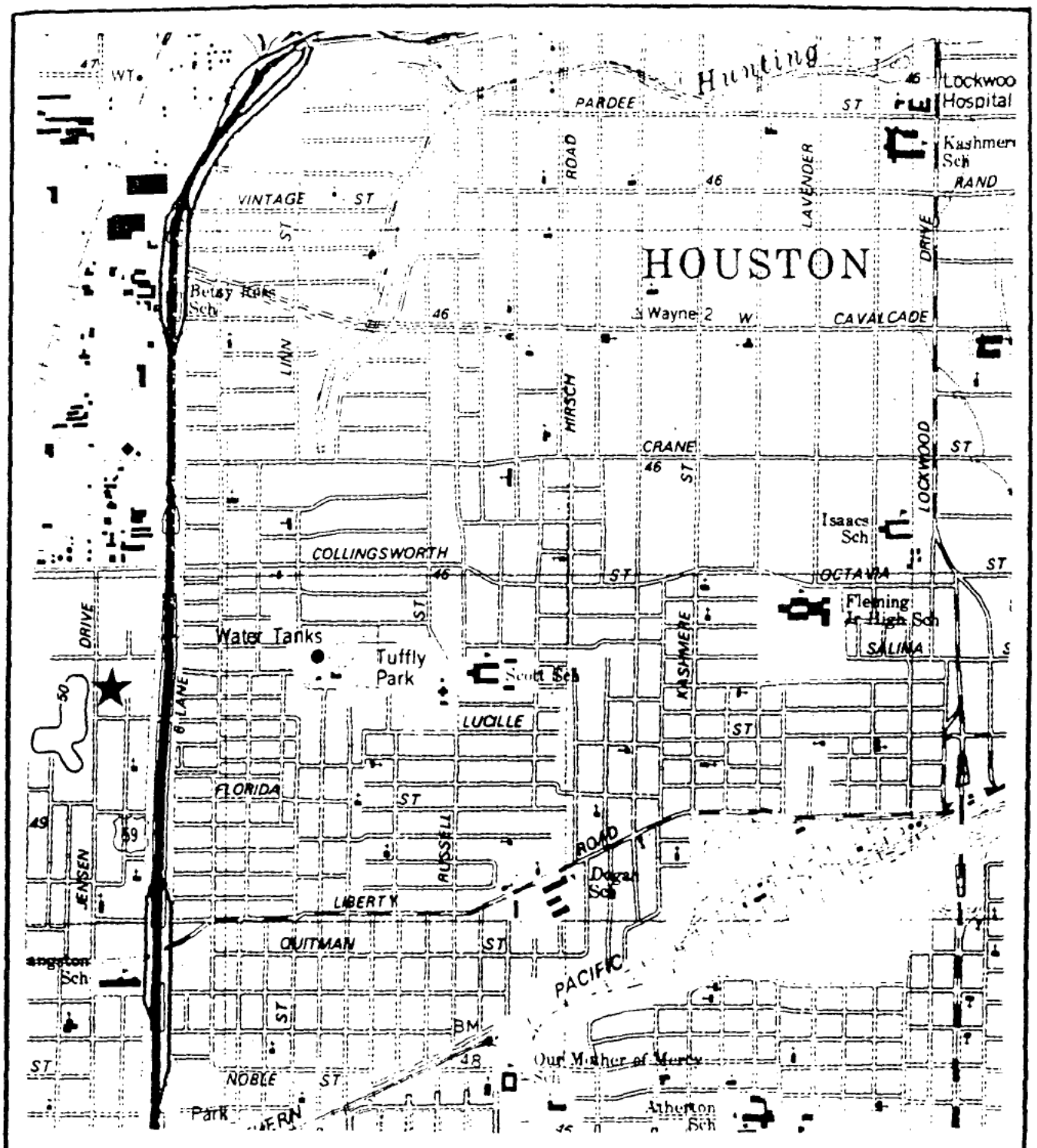
Table 3 Organic Analysis Results From Drum
and Soil Sample at Jensen
Drum Site With Chemical Properties of Substances Detected.

Sample #	Substance	Concentration	Toxicity Properties
02	2,4 - Dimethylphenol	366 ug/L	An equivocal tumorigenic agent; high oral, intra-peritoneal and intravenous. Disaster hazard: when heated to decomposition it emits toxic fumes.
	1 Bis - (2-ethylhexyl) phthalate	235 ug/L	Teratogenic effects; gastro-intestinal tract effects; possible human carcinogen; high intravenous; low oral, and intra-peritoneal; mild irritation effects skin, eye, and systemic. Disaster hazard: when heated to decom-position it emits toxic fumes.
	Benzoic acid	515 ug/L	High toxicity by vapor inhalation, a moderate skin irritant. Disaster hazard: When heated to decomposition it emits toxic fumes.
03	2 - Methylnaphthalene	28,500 ug/kg	Low oral. Disaster hazard: when heated to decomposition it emits toxic fumes.
05	Naphthalene	210 ug/L	Moderate oral; high intra-peritoneal and intravenous. An equivocal tumorigenic agent. Poisoning may occur by ingestion of large doses, inhalation or skin absorption. Moderate fire hazard when exposed to heat or flame.
	Phenanthrene	25 ug/L	Neoplastic effects; an equivocal tumorigenic agent, mutagen. High intravenous; moderate oral. Skin photo-

			sensitizer. A slight fire hazard. Disaster hazard: when heated to decomposition it emits toxic fumes.
	Fluoranthene	23 ug/L	An equivocal tumorigenic agent; high intravenous, moderate oral and skin, mutagenic. Slight fire hazard when exposed to heat or flame. Disaster hazard: when heated to decomposition it emits toxic fumes.
	Pyrene	13 ug/L	Mutagenic; an equivocal tumorigenic agent; a skin irritant. Disaster hazard: when heated to decomposition it emits toxic fumes.
06	2,4 - Dimethyphenol	1370 ug/L	Mutagenic; an equivocal tumorigenic agent; a skin irritant. Disaster hazard: when heated to decomposition it emits toxic fumes.
	Isophorone	129 ug/L	Serious eye, nose and throat irritant by inhalation; seriously toxic by inhalation

List of Attachments:

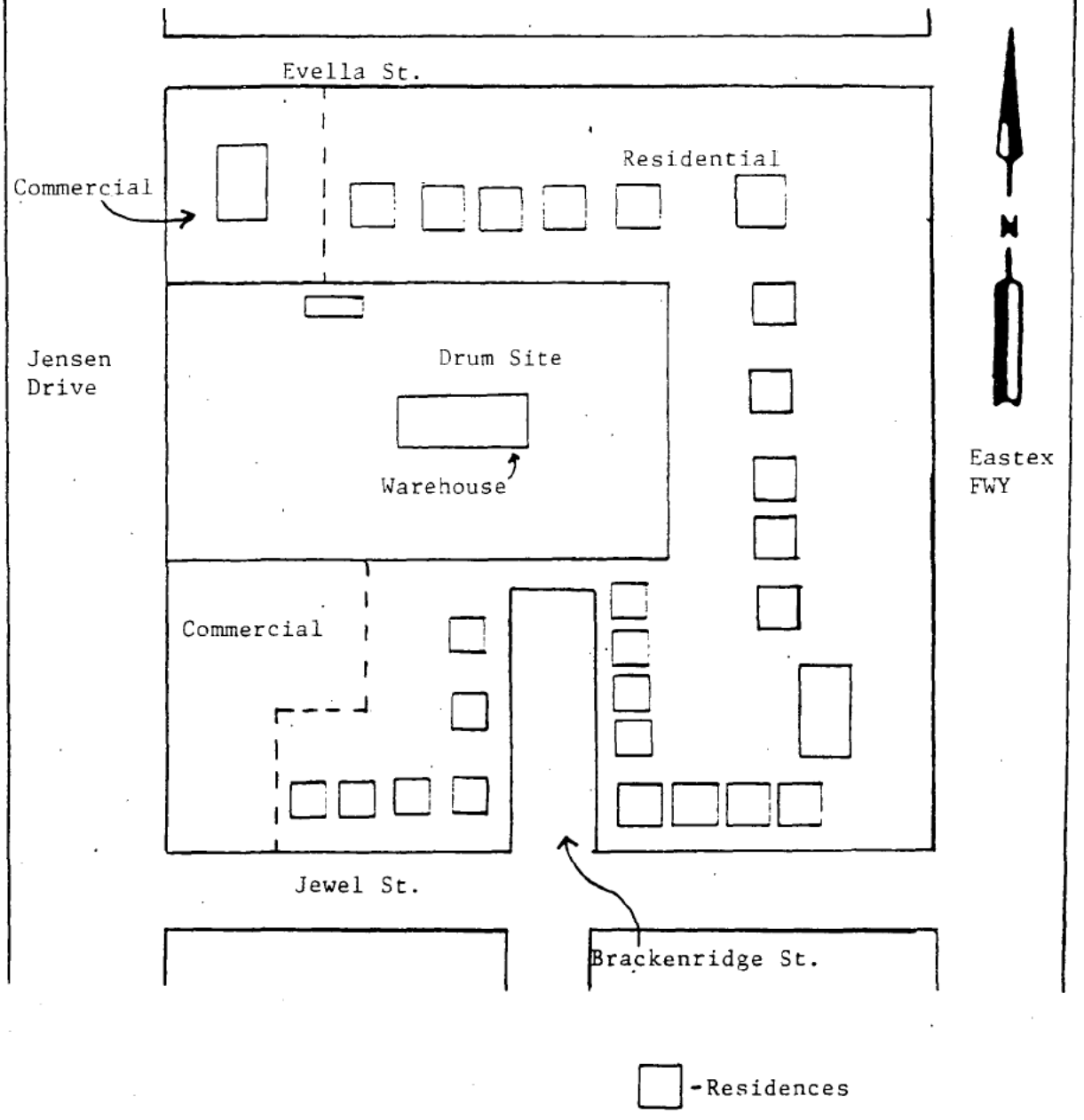
Topographic Location Map (Figure 1)
Location Sketch (Figure 2)
Site Sketch, North Side of Site (Figure 3)
Site Sketch, Northeast side of Site (Figure 4)
Site Sketch, Southeast side of Site (Figure 5)
Site Sketch, Warenouse (Figure 6)
Photographs
Unused Photographs and Negatives
Records of Communication
Logbook Copies
Information From Drum Labels
Sample Custody Form
Analytical Results
Deed Information
Copy of TDD #: T06-8810-28



	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No: N/A	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date: 11/10/88
		Originator: Patricia Herrera	

Houston - Settegast Quadrant
Houston - Harris County
Topographic Location Map
Jensen Street Drum Site

Figure 2



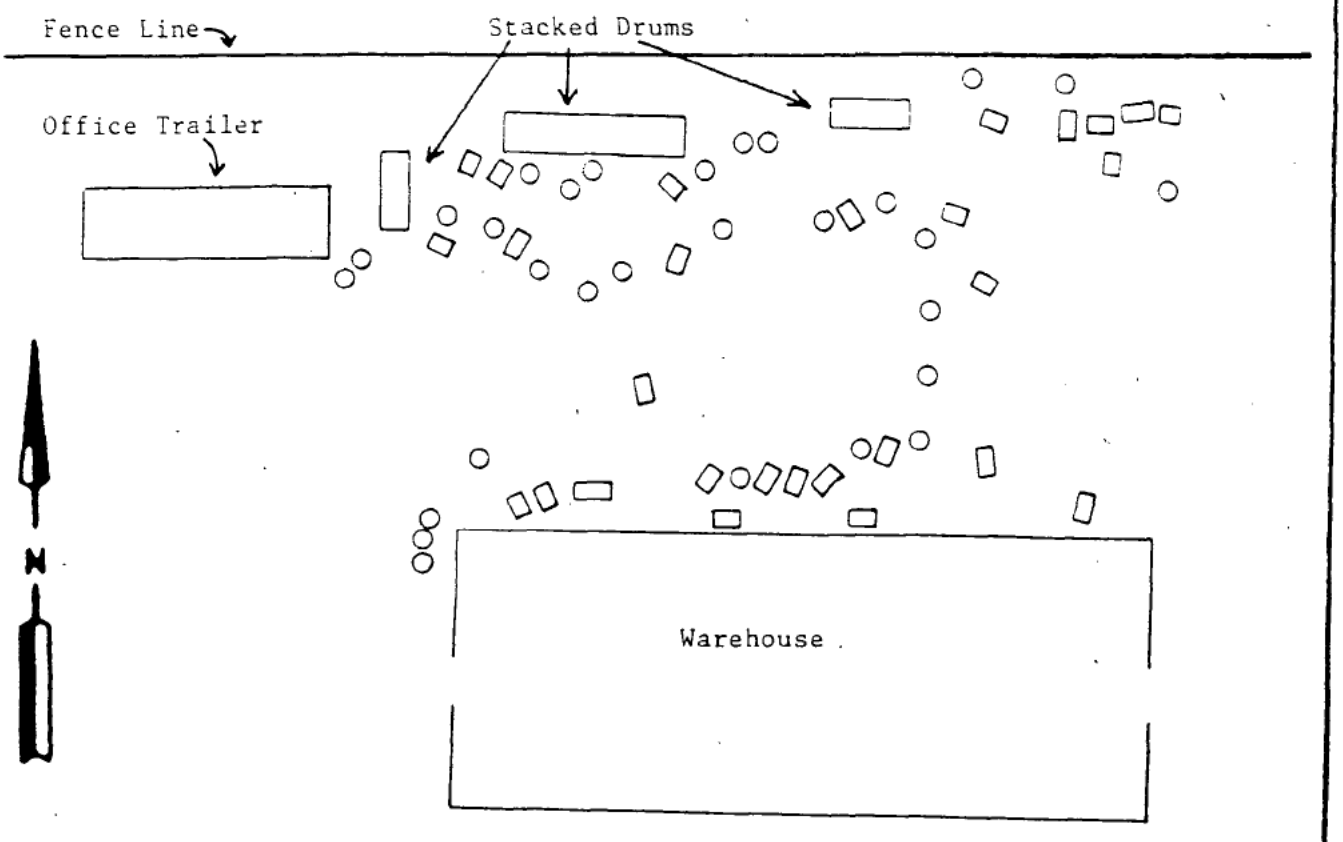
Sketch of location
of Jensen Drive
drum site showing
proximity to residences

Not To Scale

	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No: N/A	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date : 10-18-88
		Originator : Michael C. Taormina	

Site Sketch
Jensen Street Drum Site
Houston, Texas

Figure 3



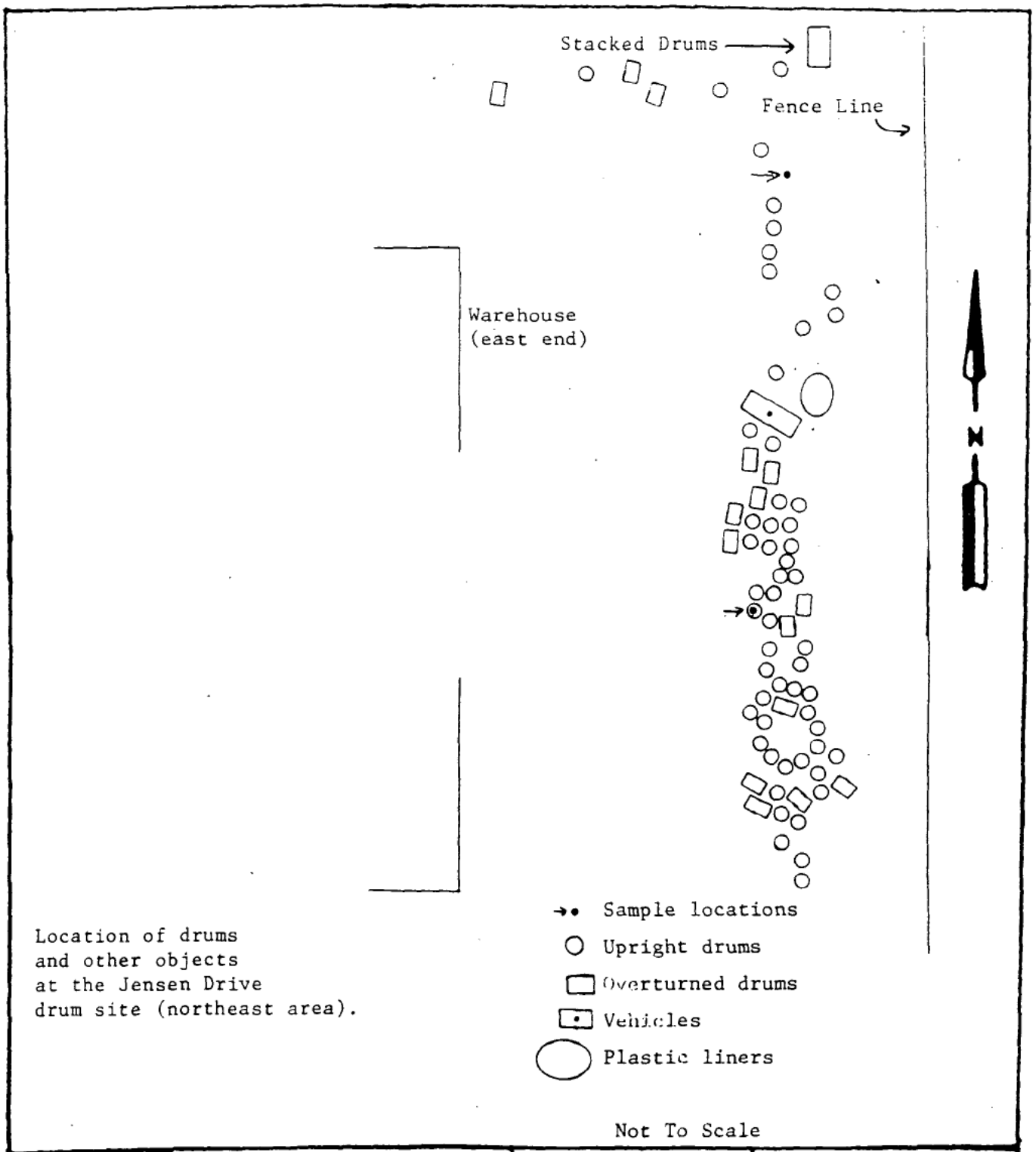
Location of drums and other objects at the Jensen Drive drum site (north side of warehouse).

○ Upright drums
□ Overturned drums
▭ Vehicles

Not To Scale

	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No:	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date: 10-18-88
		Originator: Michael C. Taormina	

Figure 4

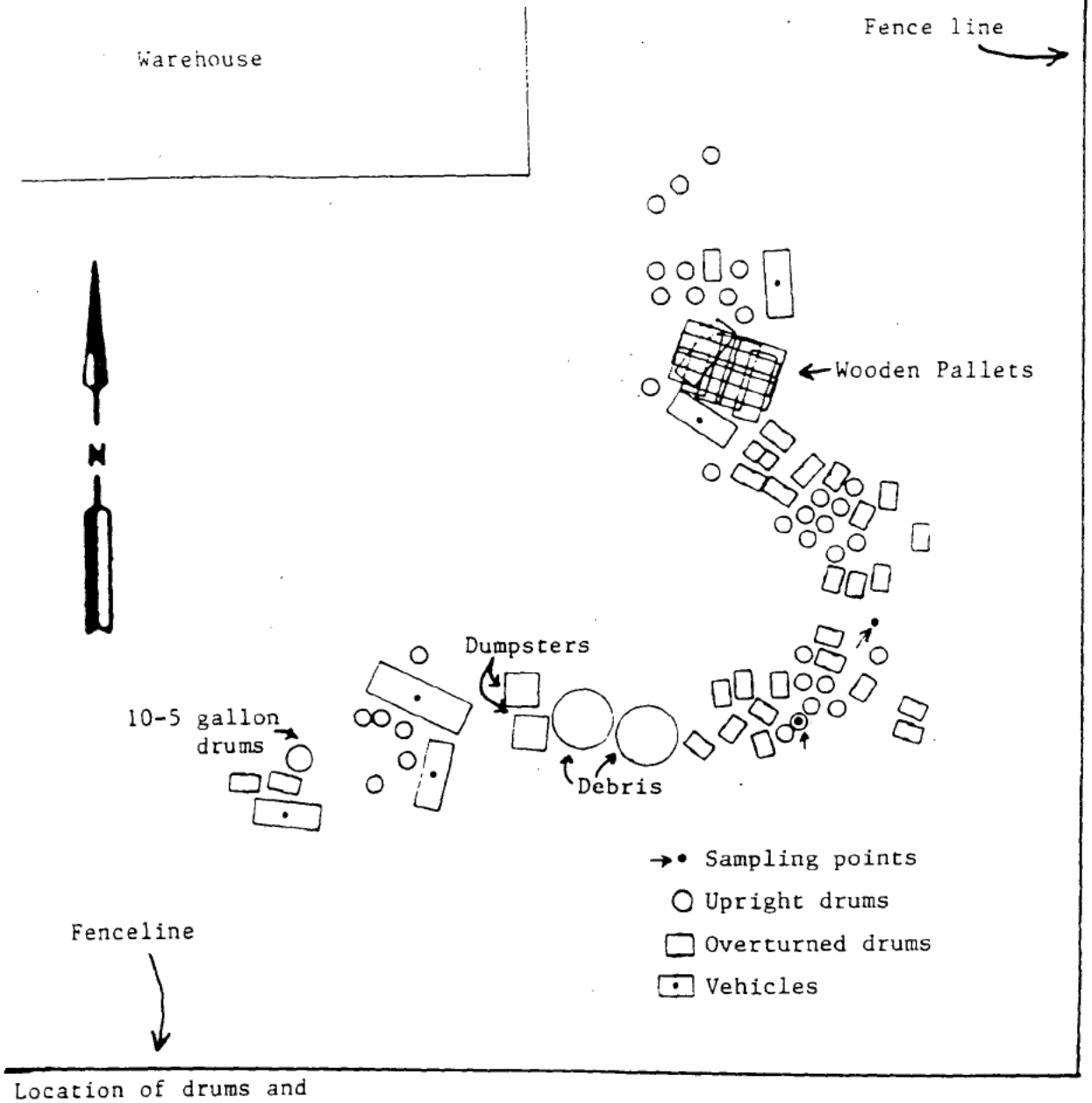


Location of drums
and other objects
at the Jensen Drive
drum site (northeast area).

Not To Scale

	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No:	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date: 10-18-88
		Originator: Michael C. Taormina	

Figure 5

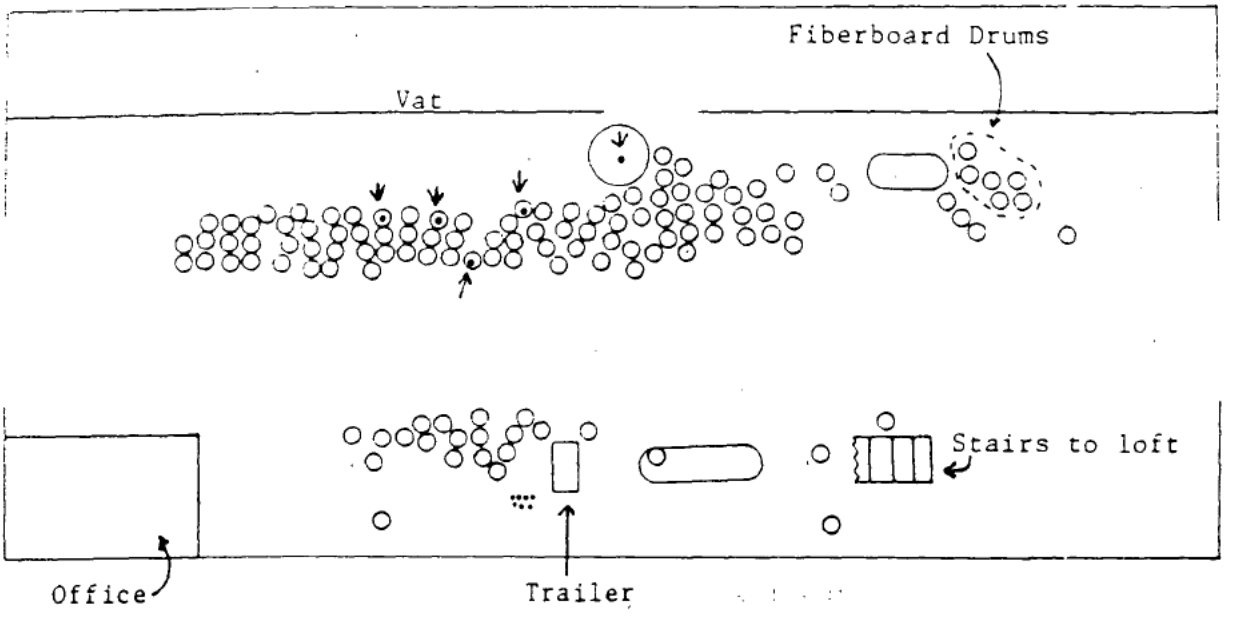


Location of drums and other objects at the Jensen Drive drum site (southeast corner).

Not To Scale

	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No:	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date: 10-18-88
		Originator: Michael C. Taormina	

Figure 6



→• Sampling points

○ Drums

· Compressed Gas Cylinders

⬭ Fiberboard drums

N

Sketch of warehouse
at Jensen Drive drum site

Not To Scale

	Ecology and Environment, Inc. Technical Assistance Team RegionVI	Case No:	TDD No: T06-8810-28
		PAN: TTX 0829 SAB	Date: 10-18-88
		Originator: Michael C. Taormina	

TDD#: T06-8810-28 Pg. 1 of 12

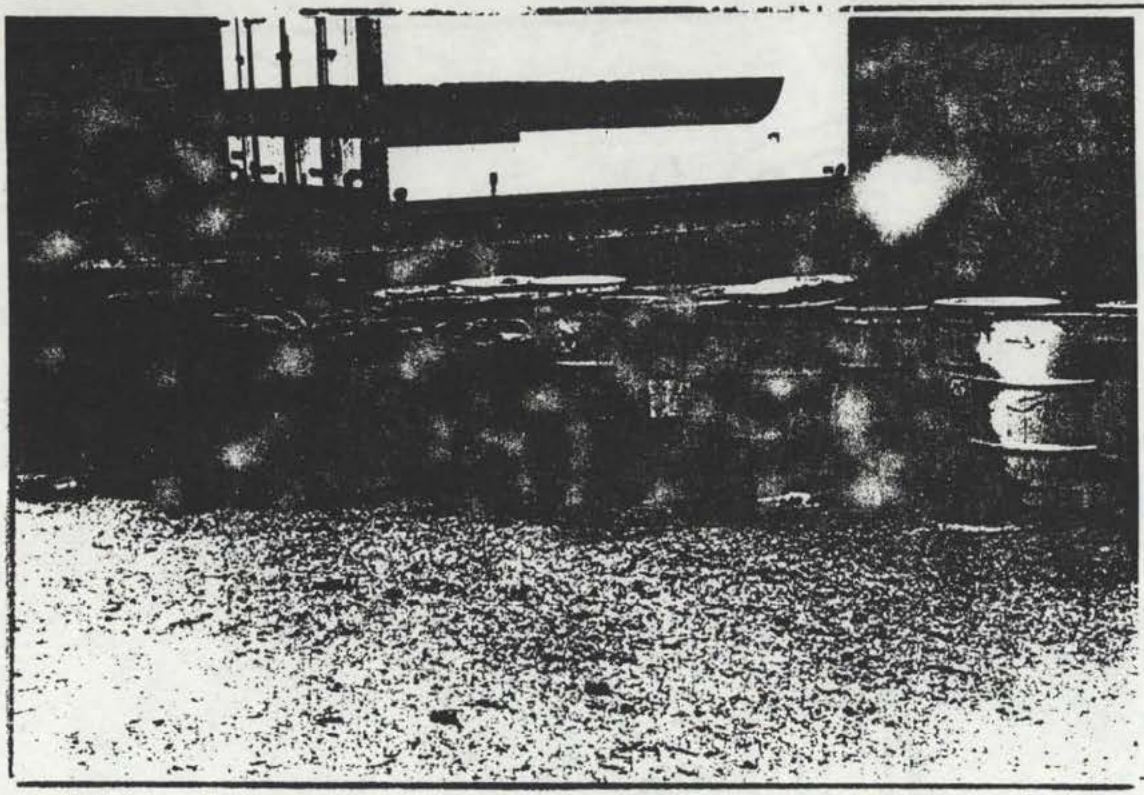
PHOTOGRAPHER/WITNESS #1 - roll 1

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/ 1056/ N

COMMENTS: Sign at entrance of site.



TDD#: TO6-8810-28 Pg. 2 of 12

PHOTOGRAPHER/WITNESS # 2-4 - roll 1

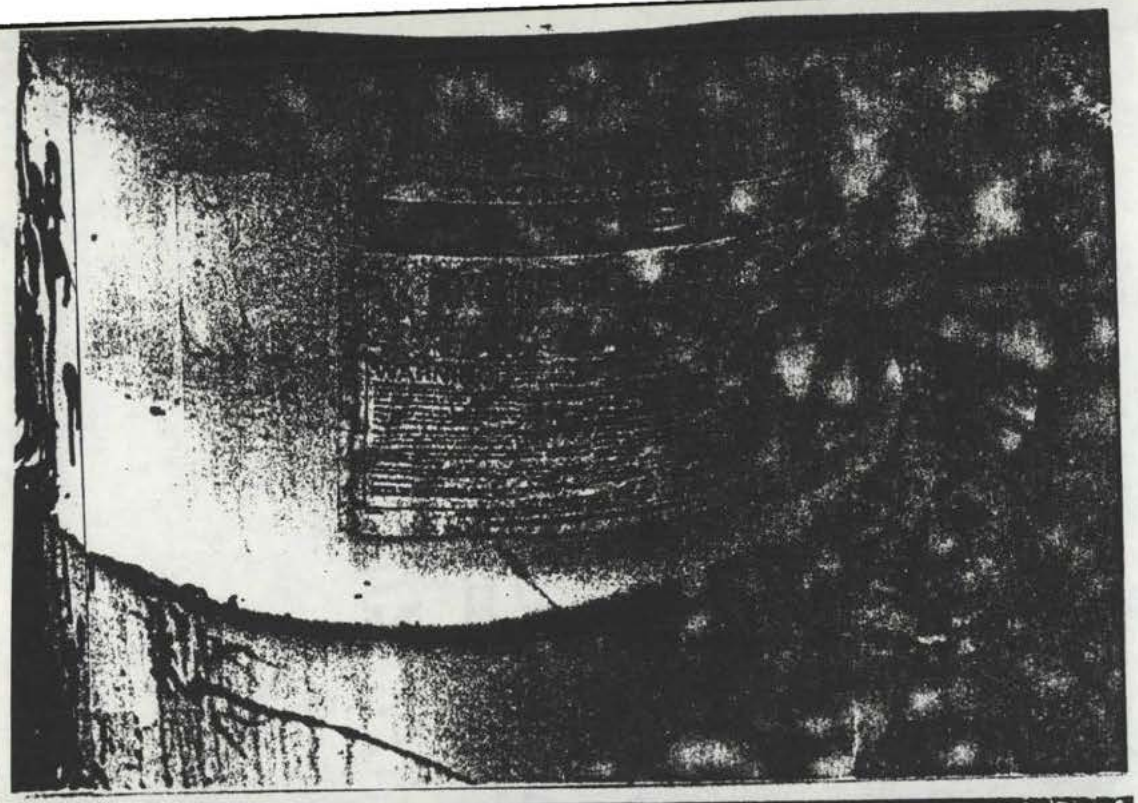
Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1102/E

COMMENTS: Drums at northeast area of site, behind warehouse.

-61-



TDD#: T06-8810-28 Pg. 3 of 12

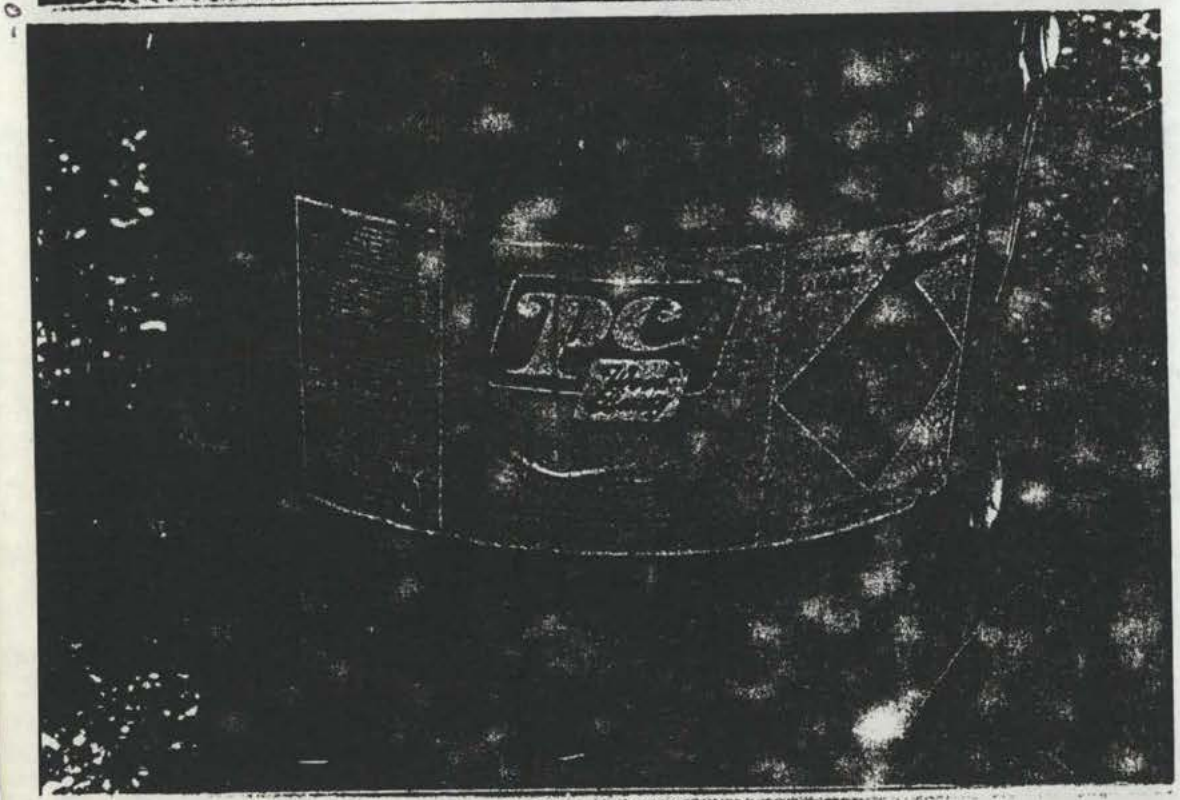
PHOTOGRAPHER/WITNESS #5 - roll1

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1103/E

COMMENTS: Label on drum showing warnings and original contents.



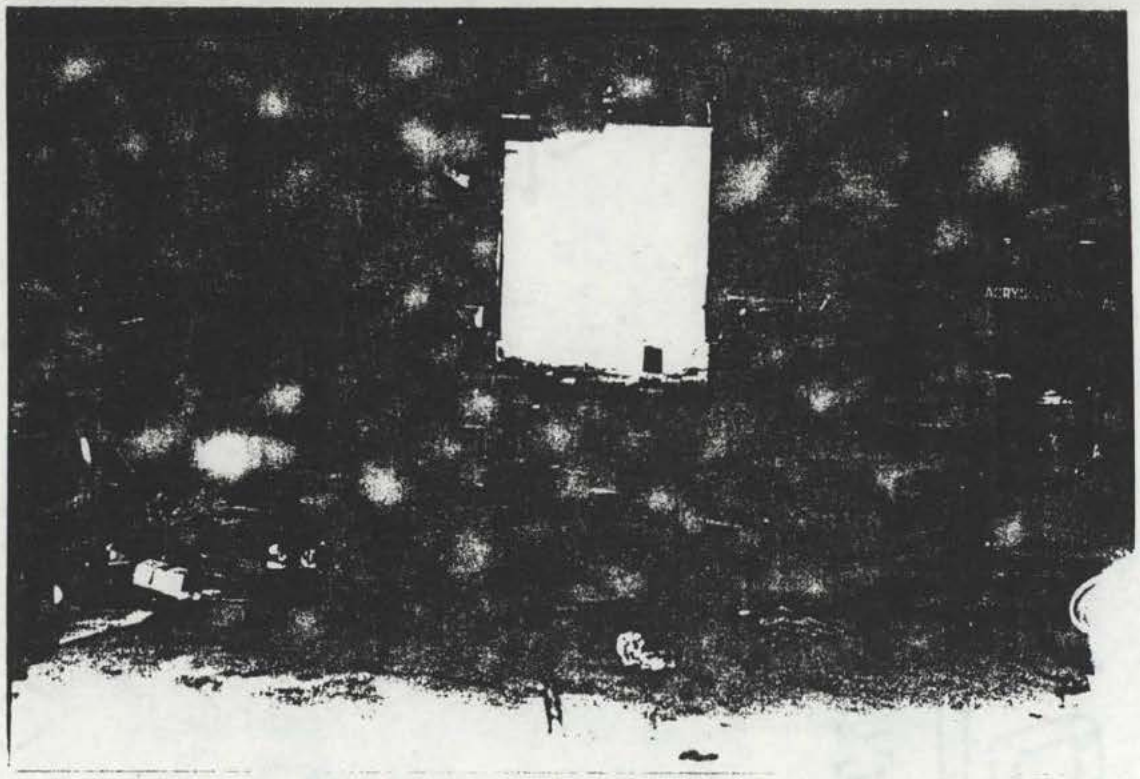
PHOTOGRAPHER/WITNESS #6 - roll1

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1104/E

COMMENTS: Label on drum showing origin and original contents of drum.



TDD#: T06-8810-28 Pg. 4 of 12

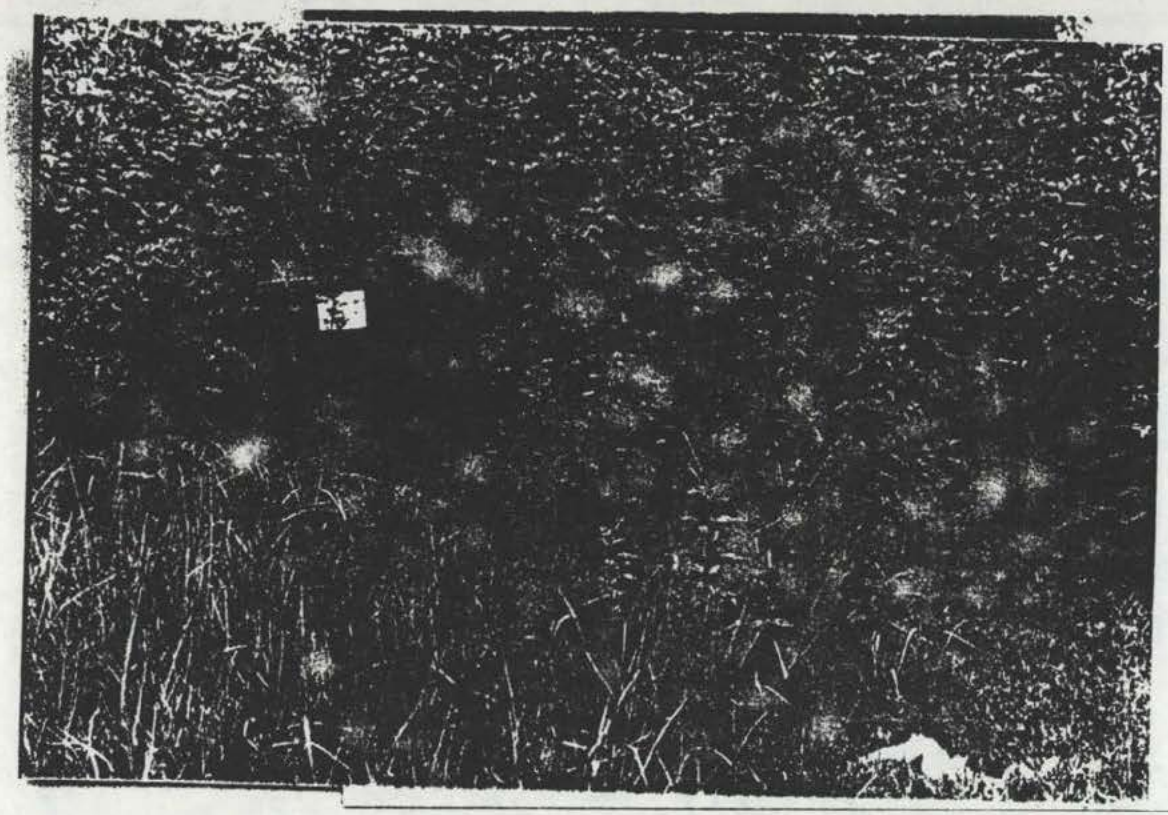
PHOTOGRAPHER/WITNESS # 7 - roll

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1105 / W

COMMENTS: Photo of interior of warehouse.



TDD#: TO6-8810-28 Pg. 5 of 12

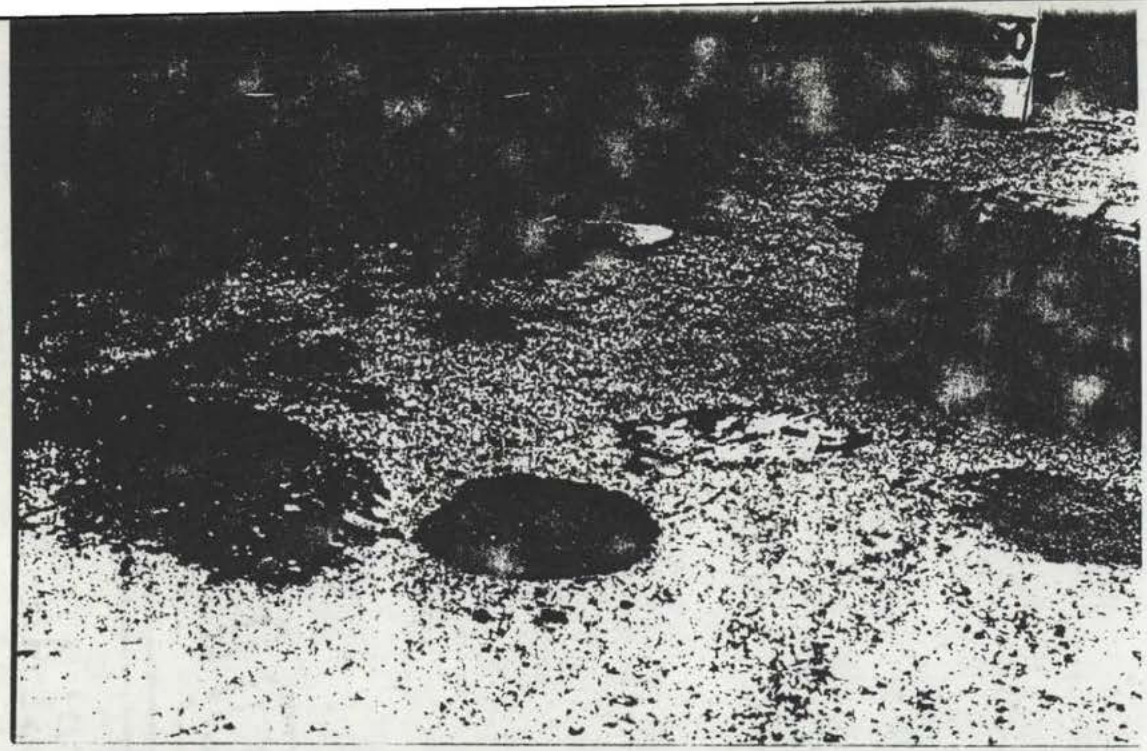
PHOTOGRAPHER/WITNESS # 8-10 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/ 1107/ NE (NW)

COMMENTS: Pan of NE corner of site showing drums, vegetation, and spill on ground.



TDD#: T06-8810-28 Pg. 6 of 12

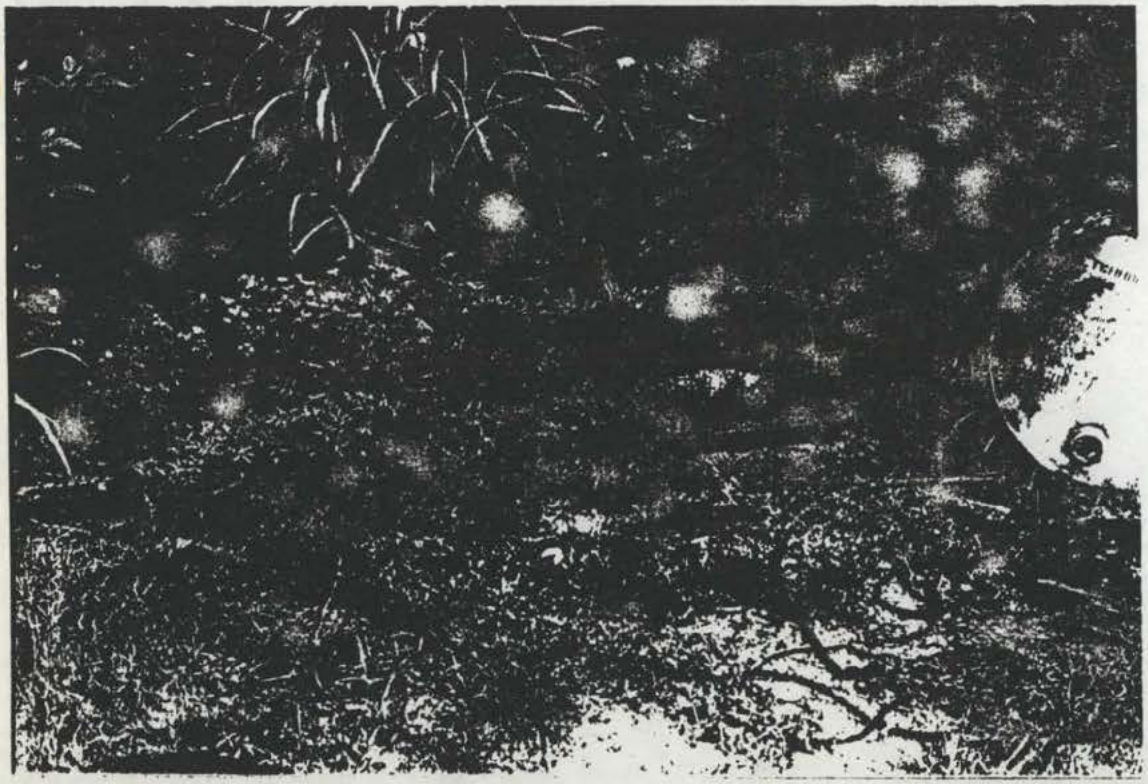
PHOTOGRAPHER/WITNESS #11 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1108 / NW

COMMENTS: Drum and liquid spill on north side of the building.



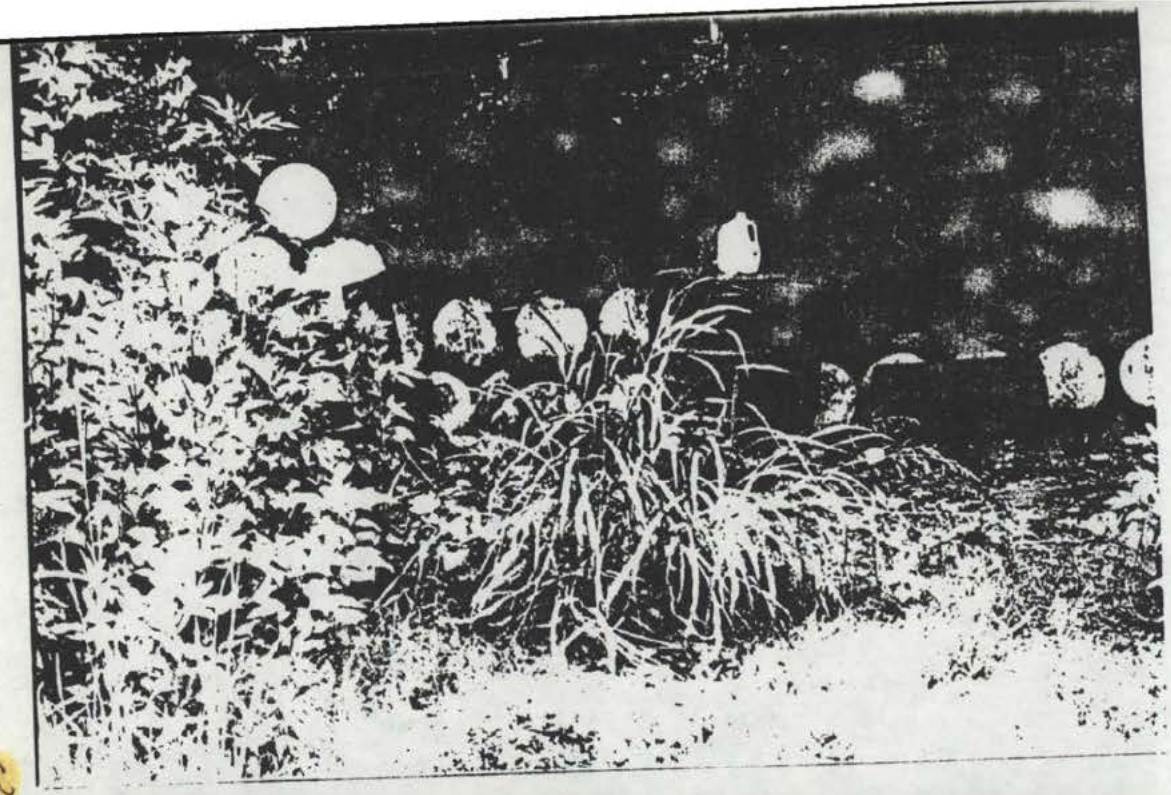
PHOTOGRAPHER/WITNESS #12 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/ 1108/ NW

COMMENTS: Photo shows spill, stressed vegetation, drums and debris on north side of the building.



TDD#: T06-8810-28 Pg. 7 of 12

PHOTOGRAPHER/WITNESS #13- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1108/N

COMMENTS: Stacked drums and stressed vegetation on north side of property. Note residence just beyond the fence.

-24-

PHOTOGRAPHER/WITNESS #14 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1111/W

COMMENTS: Photo shows drums, stressed vegetation and chemical stain.

TDD#: T06-8810-28 Pg. 8 of 12

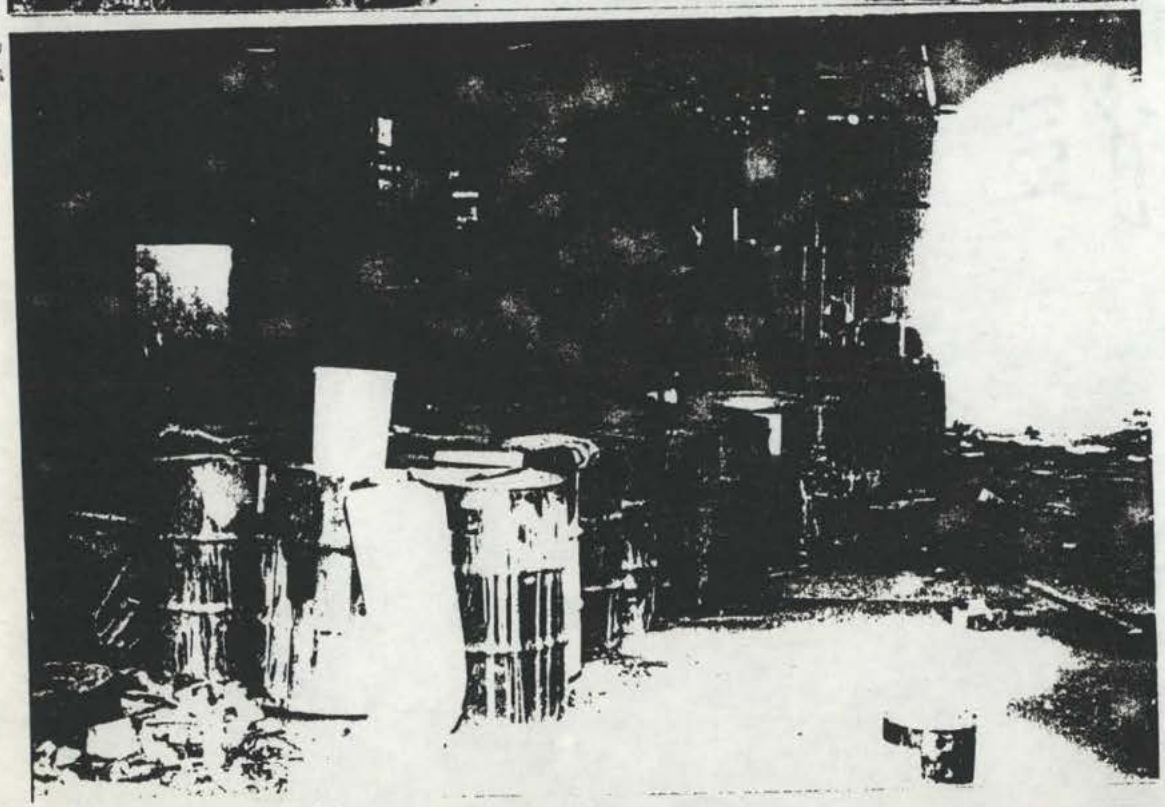
PHOTOGRAPHER/WITNESS #15 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1112 / W

COMMENTS: Photo of drums, and one that originally contained a herbicide.



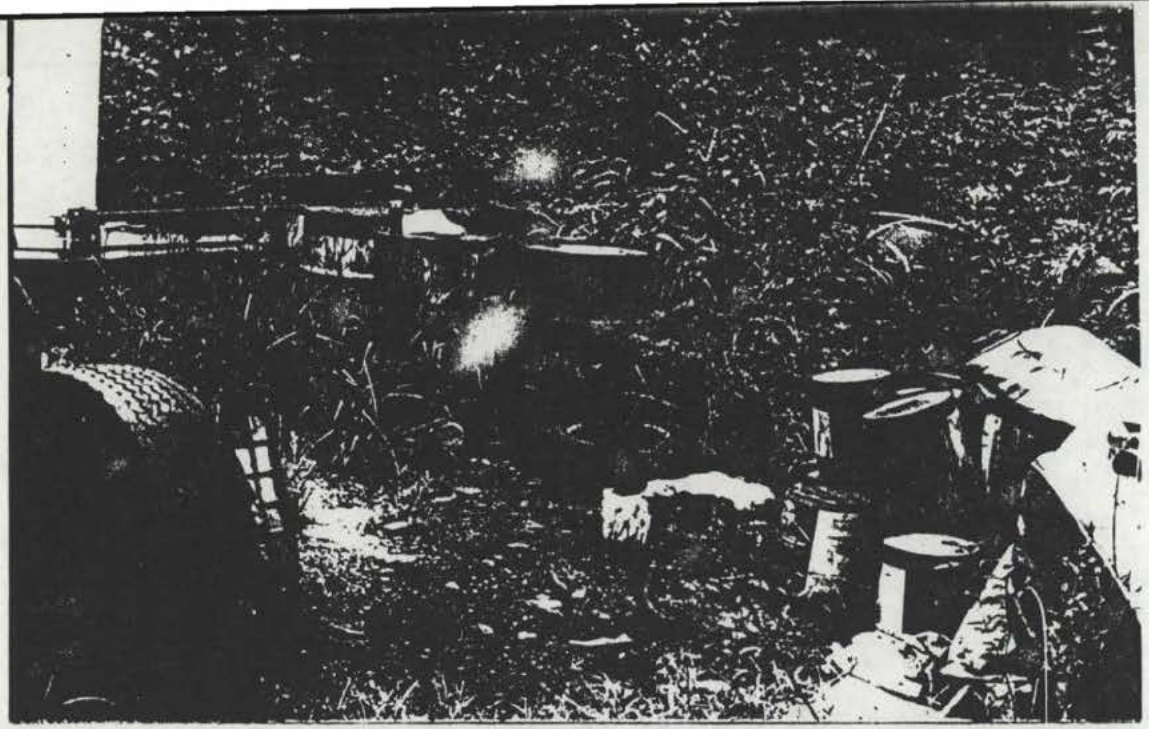
PHOTOGRAPHER/WITNESS #16 - roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/ 1112/ E

COMMENTS: Interior of warehouse showing drums, vat and debris.



TDD#: TO6-8810-28 Pg. 9 of 12

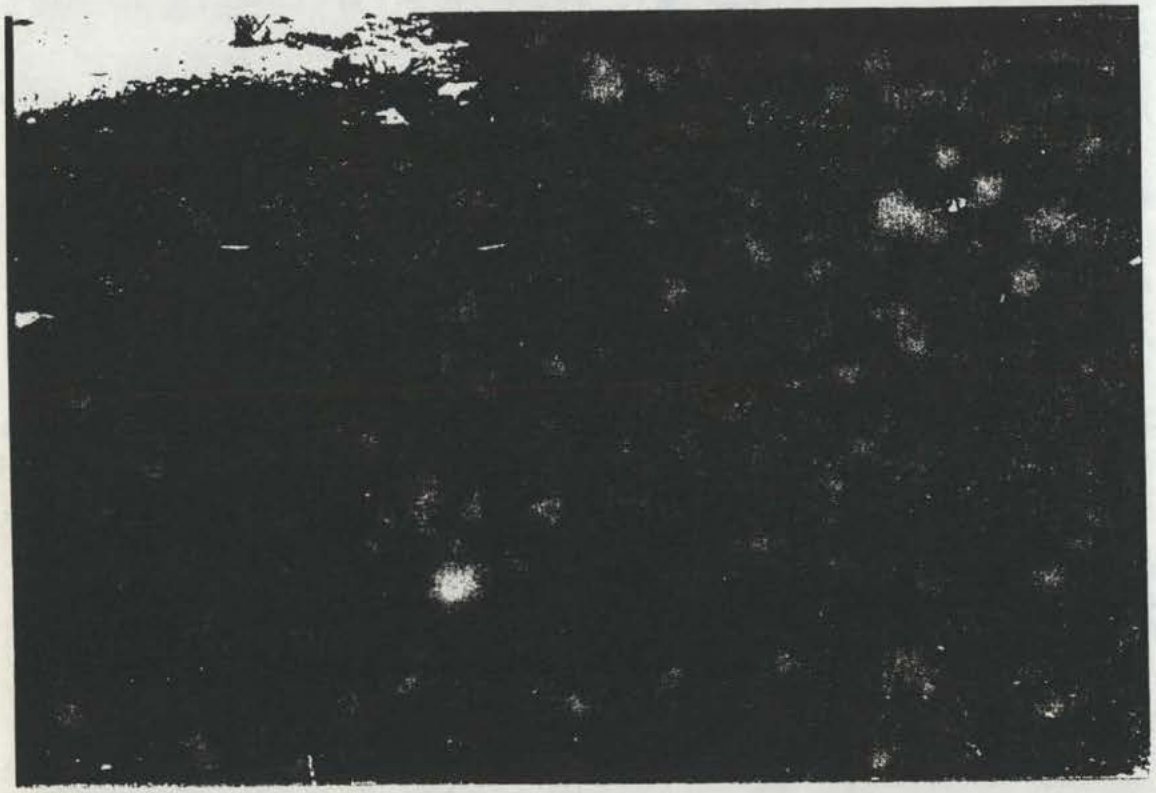
PHOTOGRAPHER/WITNESS #17- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1115 /E

COMMENTS: Drums and abandonded vehicles on south end of site.



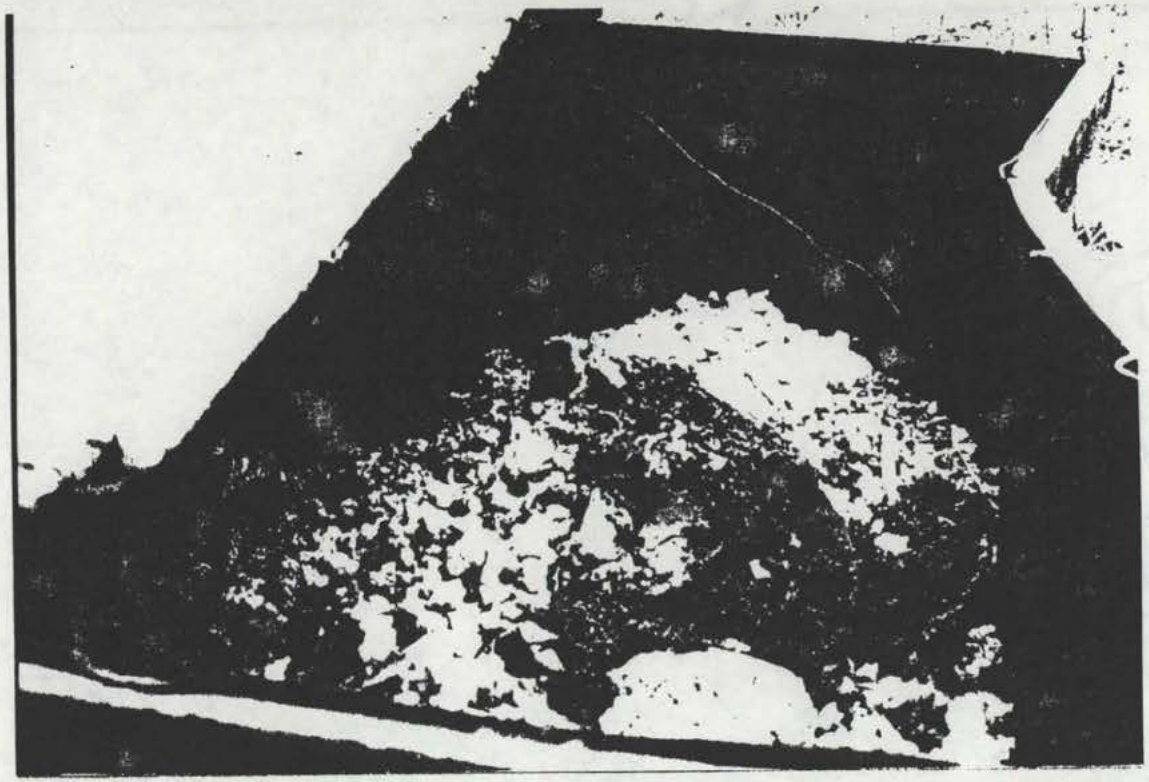
PHOTOGRAPHER/WITNESS #18- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1117 /W

COMMENTS: Chemical stains in puddle near SE corner of warehouse.



TDD#: T06-8810-28 Pg. 10 of 12

PHOTOGRAPHER/WITNESS #19- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1118/E

COMMENTS: Inside of dumpster showing polymer - like material.

TDD#: T06-8810-20 Pg. 11 of 12

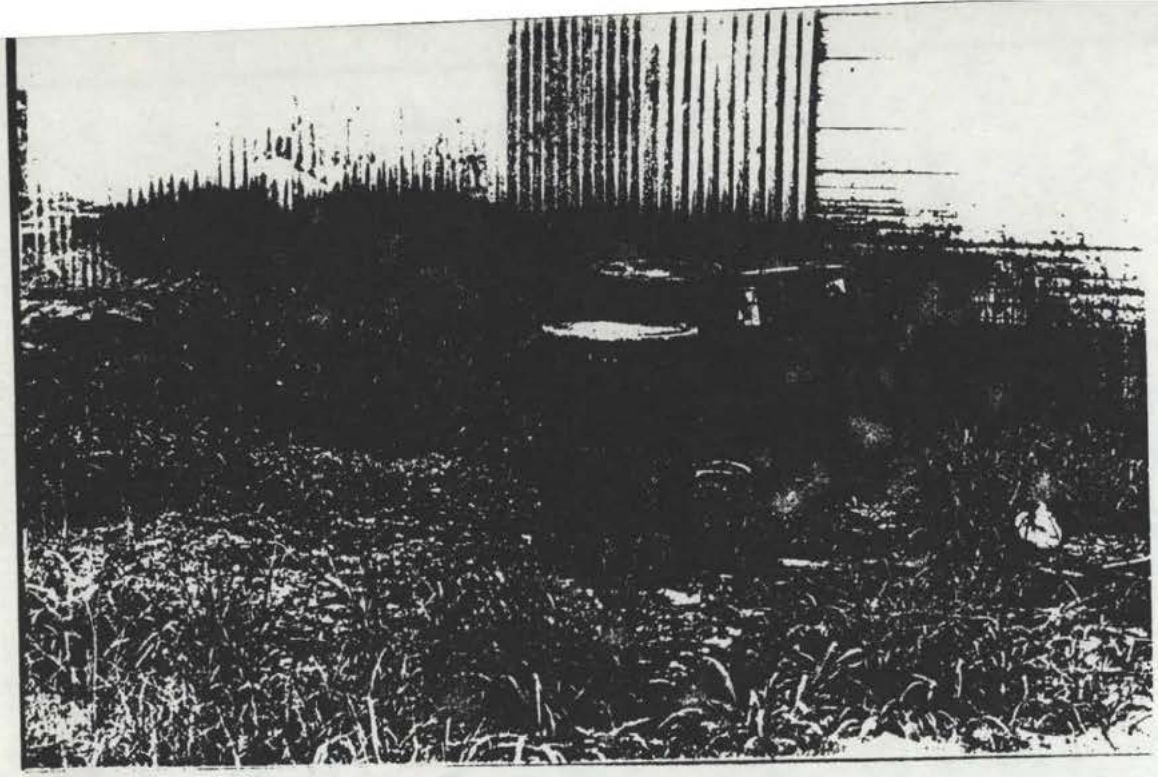
PHOTOGRAPHER/WITNESS # 20-22- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1119/ E

COMMENTS: Pan of drums and debris in southeast area of site. Note stains on ground.



TDD#: T06-8810-28 Pg. 12 of 12

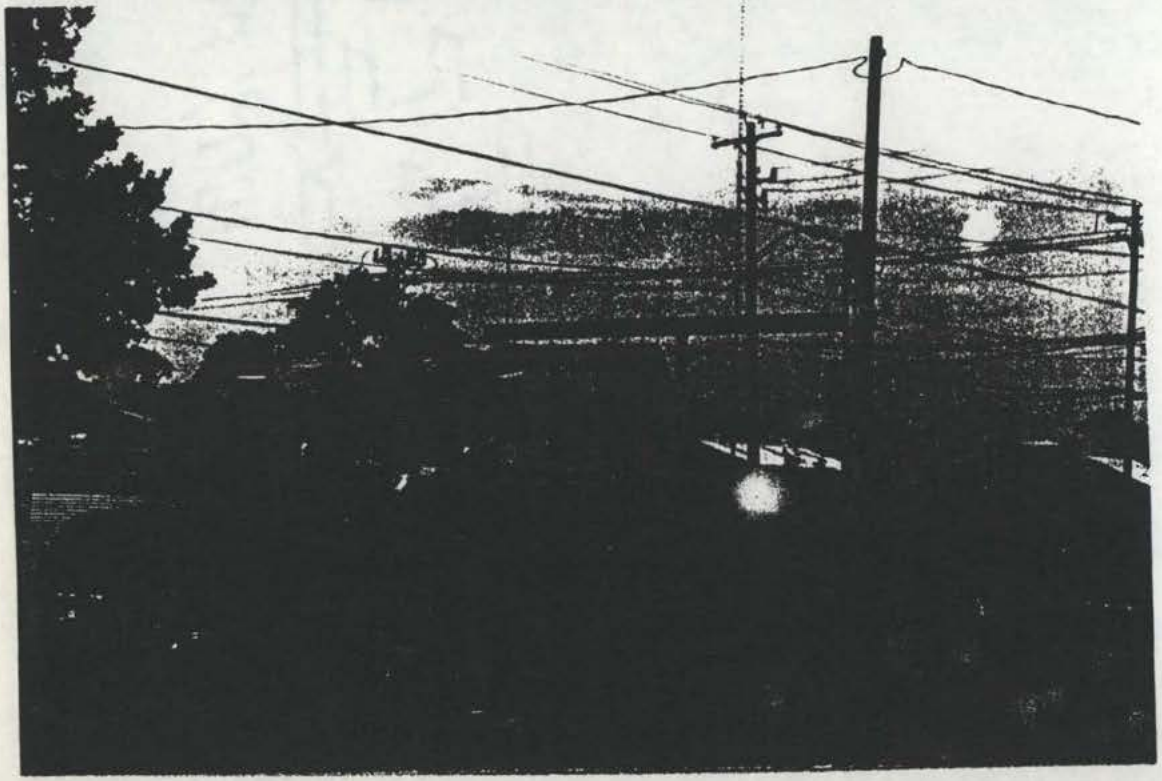
PHOTOGRAPHER/WITNESS # 23- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/1122 / W

COMMENTS: Drums and stained ground on east side of warehouse.



PHOTOGRAPHER/WITNESS # 24- roll 2

Richard Yeager

DATE/TIME/DIRECTION

8-19-88/ 1127/ NW

COMMENTS: Sign and entrance to site. Street is Jensen Drive.

MICHAEL TIERNAN

Originator

PHONE CONVERSATION RECORD

Conversation with:

Name: PAT HAMMACK

Company: EPA - DALLAS

Address: _____

Phone: 214-655-2270

Date: 8/16/88

Time: 1235 AM/PM

✓ Originator Placed Call

_____ Originator Received Call

W.O. No.: _____

Subject: JENSEN ST. / DAVIS ST. DRUM SITES

Notes: Purpose: To get preliminary information on the operation of these sites - what to expect and how to approach the job.

Result: Ms. Fred Weinstein of May Corp. will accompany both sites.

The Jensen St site is an open lot with about 35 drums that have been vented with an ax. Ten samples - drum and soil will be taken there.

The Davis St site has about 150 drums some of which are open. Some are under protective sand and bulging. Ten samples - drum and soil are to be taken here also.

The object of the sampling is to determine if hazardous materials are present or not.

___ File: _____

___ Tickle File: ___/___/___

___ Follow-Up By: _____

___ Copy/Route To: _____

Follow-Up Action: Visit sites and plan sampling plan.

Originator's Initials: MC

-30-

Originat

PHONE CONVERSATION RECORD

Conversation with:

Name: CHARLES LEE

Company: ~~D.A.K.~~ DOGGETT + WORKMAN AUTO PARTS

Address: 3111 JENSEN ST

HOUSTON TX

Phone: 713-225-6540

Date: 11/21/88

Time: 0930 AM

X Originator Placed Call

____ Originator Received Call

W.O. No.:

Subject: Jensen St. ~~and Davis St.~~ Drum Sites

Notes: Purpose: To find phone numbers for R J Gray - landowner at 3116 Jensen St.

Result: Mr. Lee had no number for R J Gray, but did have a number for his son Richard D Gray

(b) (6) [redacted]

lives in Humble.

___ File:

___ Tickle File: __/__/__

___ Follow-Up By:

___ Copy/Route To:

Follow-Up Action: Call R D Gray

Originator's Initials: RLC

Originat

PHONE CONVERSATION RECORD

Conversation with:

Name: RICHARD D GRAY

Company: JENSEN SITE

Address:

Phone: 713-446-5351

Date: 10/31/88

Time: 0455 ~~PM~~ AM/PM

X Originator Placed Call

____ Originator Received Call

W.O. No.:

Subject: Jensen St. and Davis St. Drum Sites

Notes: Purpose: To find the phone number of his father R J Gray

Result: Ronald J Gray lives in Lufkin

Home phone: (b) (6) [redacted]

Work phone: 409-829-7287

Mr. RD Gray said that Mr. Winston knows who brought drum to the warehouse - one entity being Fisher Drum in Diboll.

Mr. Gray wants to help any way he can.

TAT gave Mr. Gray OSC Pat Hammack's name & phone number so that he could give Pat information and get advice.

___ File:

___ Tickle File: __/__/__

___ Follow-Up By:

___ Copy/Route To:

Follow-Up Action: Call PAT Hammack with information

Originator's Initials: [signature]

Origin:

PHONE CONVERSATION RECORD

Conversation with:

Name: PAT HAMMACK

Company: EPA DALLAS

Address:

Phone: (b) (6)

Date: 10/3/88

Time: 1075 AM/PM

X Originator Placed Call

____ Originator Received Call

W.O. No.:

Subject: Jensen St. ~~and Davis St.~~ Drum Sites

Notes: Purpose: Give OSC Hammack information about Mossie Gray, and ask about information to get the title search done.

Results: OSC Hammack had already spoken to Mr. Gray. Mr. Gray will get names of people ~~who~~ (rec'd) Mr. W. from whom Mr. Winston received drums.

Instructions for TAT:

- Call Mr. Winston and get names from him also.
- Commence a title search on both Jensen St and Davis St Sites for the last 10 years.

____ File:

____ Tickle File: __/__/__

____ Follow-Up By:

____ Copy/Route To:

Follow-Up Action: As above

Originator's Initials: [signature]

Original

PHONE CONVERSATION RECORD

Conversation with:

Name: FRED WINSTON

Company: MAVERICK DRUM

Address: 316 JENSEN
HOUSTON TX

Phone: (b) (6) [redacted]

Date: 10/31/98

Time: 1250 AM/PM

X Originator Placed Call

____ Originator Received Call

W.O. No.:

Subject: Jensen St. and Davis St. Drum Sites

Notes: Purpose to call Mr Winston from whom he may have received drums.

Result Mr Winston gave TAT the following information

SAMMY FISHER
LIONEL FLANNAGAN - (b) (6) [redacted]
MACK PETER - MAVERICK DRUM CO
VERDI BOBBINS ON YELLOWSTONE [BLVD]

Mr. Winston said the drums were placed in the warehouse ~~on Jensen St~~ @ [316 JENSEN] without his knowledge.
Mr. Winston said he would call TAT with more information

___ File:

___ Tickle File: __/__/__

___ Follow-Up By:

___ Copy/Route To:

Follow-Up Action: Wait for more information - call Hammond for direction

Originator's Initials: MG

Origins

PHONE CONVERSATION RECORD

Conversation with:
Name: CALVIN SIMMONS
Company: re: MAY COOPERIDGE DRUM
Address: 3116 JENSEN ST
HOUSTON TX
Phone: (b) (6) (JOHN)

Date: 10/ 4/ 88
Time: 1315 AM/PM

(mcd)
X Originator Placed Call
X Originator Received Call
W.O. No.:

Subject: Jensen St. and Davis St. Drum Sites

Notes: Purpose: To get help from Pat Hammack regarding Pat's site visit to the Jensen St. Drum Site.

Result: Mr. Simmons called from jail to see if he could get pictures from OSC Hammack. These pictures may contain Mr. Simmons. Mr. Simmons said he spoke with OSC Hammack while OSC Hammack was making a preliminary site investigation.

Mr. Simmons said he could give the EPA names of people who left drums at the warehouse.

Mr. Simmons mentioned the names of R D + R J Drag and Fred [Winston] referring to the owners of the property and the drum location.

TAT said it would relay the message and information to OSC Hammack. A message could be left at (b) (6)

___ File:
___ Tickle File: / /
___ Follow-Up By:
___ Copy/Route To:

Follow-Up Action: Call Pat Hammack

Originator's Initials: (mcd)

Origina'

PHONE CONVERSATION RECORD

Conversation with:

Name: Pat Hammack

Company: EPA Dallas

Address:

Phone: (b) (6) [redacted]

Date: 10/4/88

Time: 1340 ~~AM~~/PM

_____ Originator Placed Call

_____ Originator Received Call

W.O. No.:

Subject: Jensen St. and Davis St. Drum Sites

Notes: Purpose: To give OSC Hammack information from Ms. Calvin Simmons as presented on the previous Phone Conversation Record.

Resolution: TAT conveyed the information found on the previous conversation record.

___ File:

___ Tickle File: ___/___/___

___ Follow-Up By:

___ Copy/Route To:

Follow-Up Action: None

Originator's Initials: (illegible)

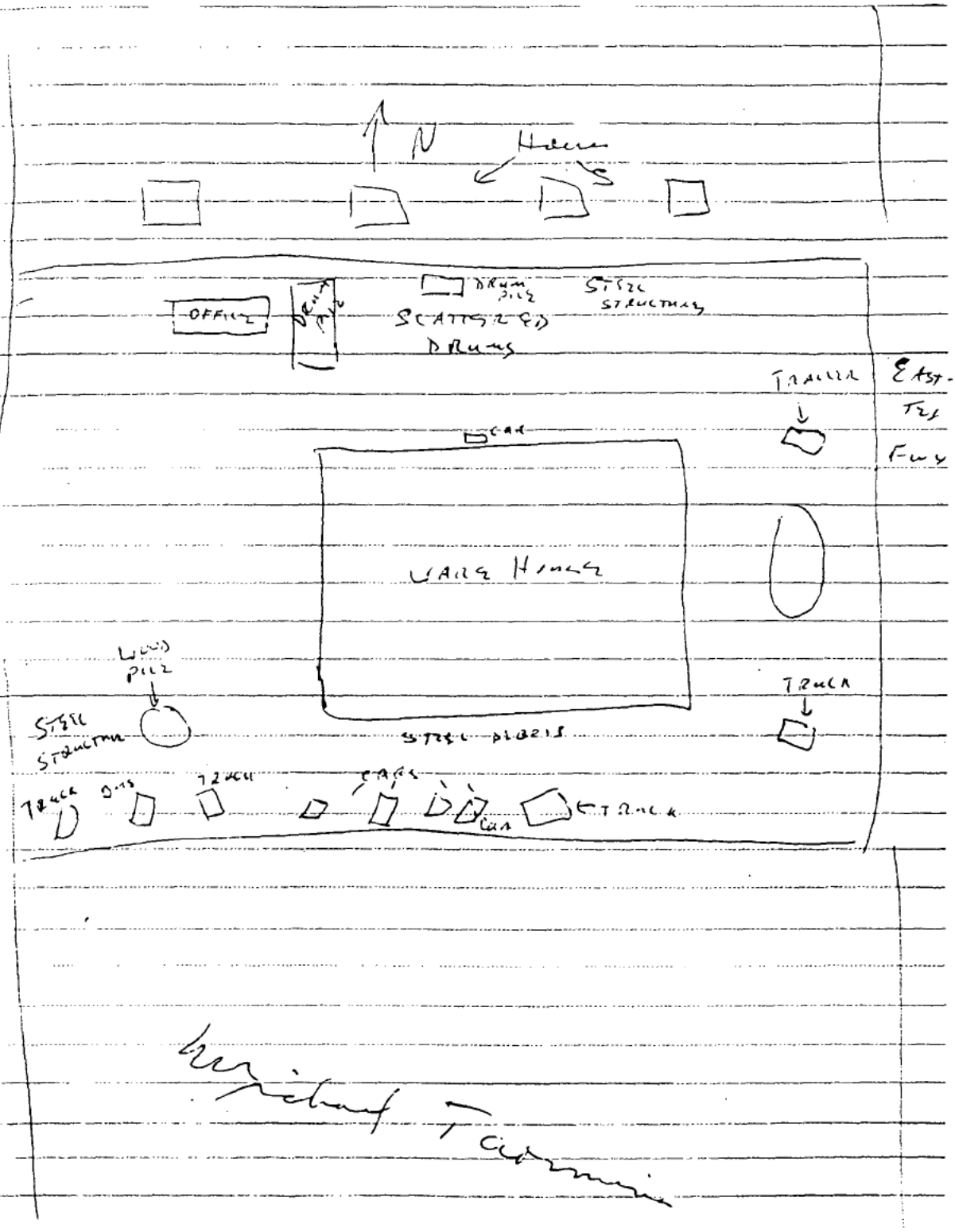
Monday August , 1988
1300 Tarantino & Wisniewski OSC
Hammack Discussed Site Safty
1320 Left Site To Return To
Office
RAM 10 & Victoreen gave
Reading Thought To be
Invalid But Contacted
TEXAS Radiation To Check
Site

Tuesday July 30, 1988
Wea. 42 70's to mid 90's
Wind North 5 to 10 mph
Cloudy
0920 TAT's Wisniewski, Takimino &
Hellela Arrive @ Site
0950 Discuss site safety plan
& drum opening Procedure with
TAT's Wisniewski, Takimino, Hellela
1030 Wisniewski, Takimino Enter
Hot Zone in Level C
1115 TAT's Wisniewski, Takimino
Exit Hot Zone
1210 TAT's Wisniewski, Takimino &
Hellela Enter Warehouse
in Level "B" To check
drum's with O Hnu, explosive-
meter & RAM 10.
1230 TAT's Exit Warehouse
1315 Leaves for Lunch
1445 Survey outer perim. of
site & count Drums
1555 TAT enters Warehouse
No 8 TAT exit's Warehouse
1630 TAT Leaves Site

Wed, Aug 31, 1988
0930 TAT Leaves warehouse
0920 TAT arrives at site
0959 Safety meeting is held
Present at meeting TAT's
Tarimino, Hellera, Wisnieski &
OSC Hammack @ meeting drum
opening procedures are discussed
drums to be opened are talked
about Soil sample area are
discussed.
1030 TAT's Wisnieski & Tarimino
dress out Level "B"
& enter Hot Zone to sample
drums
1055 TAT's Wisnieski & Tarimino Exit
Hot Zone,
1205 TAT's Wisnieski Tarimino Returns
to Hot Zone in Level B
1258 TAT Exits Hot Zone
1315 TAT's Wisnieski, Hellera OSC
Hammack leave site to find
Air for SCBA,
1610 Find Air & Return to site
1650 TAT Leaves site

Thursday Sept. 1, 1988
0745 AT Leaves warehouse
0850 TAT arrives @ site
0925 TAT's Wisnieski, Tarimino &
Hellera has H&S meeting
talk about opening drums
in confined space & work
assignments.
0940 TAT Wisnieski & Hellera suit
up in Level "B" for drum
opening in warehouse
1035 TAT Exits warehouse
for break
1110 TAT's Wisnieski & Hellera
enter warehouse to finish
sampling
1150 TAT's Wisnieski & Hellera
Exit warehouse
1200 Sampleing Completed @
1150
1215 Secure site & leave
All sampling Complete

August 19, 1988 Friday
Weather - overcast, , humid
0925 TAT's Tarmin, Warnick and Yeager leave office for Jensen St Drum site. TAT will stop at Davis St site first
1053 Arrive at 3116 Jensen St. TAT spoke with Charles of Doggett & Robinson Auto Parts store located across Jensen Dr. from the site. Mr ~~Doggett~~ Charles stated that the owner of 3116 Jensen Dr., Mr R J Doug did not want unauthorized person on the property. TAT assured Mr Charles that the EPA was just taking a survey and sampling in the near future.
The site is approximately 300 feet by 150 feet. There are abandoned vehicles on the site and upto 200 drums scattered about. There is a large shed in the ~~center~~ center of the site about 50 ft by 100 feet. There are drums, fiberboard boards, tires, wood, some car parts and other debris in the warehouse.
Labels on some of the drums indicate that flammable liquids, lacquer, ammonia, miscellaneous organic liquid, waste oil and other material were kept in them.
Company names include Reichold Chemical, Chemtron Chemical, Ashland Chemical, PC Wood Derivs.
Drums ~~removed~~ are made of steel, polyethylene & fiberglass and are in varying stages of decay.
There are compressed gas cylinders present also
Organized Tarmin


N
Helen
OFFICE
SCATTERED DRUMS
STEEL STRUCTURE
TRAILER
EAST-TEX FUEL
CAR
WARE HOUSE
WOOD PILE
STEEL STRUCTURE
STEEL PLATES
TRUCK
TRUCK
TRUCK
TRUCK
CARS

Most of the drums are not sealed & bungs have been removed

1056 Sign in front of property from W. photo #1

1102 #2-4 pan of drums at rear of property

1103 #5 label on drum at rear of property from E

1104 #6 A/A from E

1105 #7+8 drums in bldg.

1107 film roll #2, photo #1-3 pan of drums in NW corner

1108 #4 liquid on ~~soil~~ ground on N side of bldg from NW

1108 #5 A/A from N

1108 #6 stacked 20 gallon drums on N side of property from N

1111 #7 Chemical stain on ground from W

1112 #8 herbicide drum from W

1112 #9 drums in warehouse note large plastic containers from E

1115 #10 drums on southern boundary of property from E

1117 #11 Chemicals stains in puddle, near SE corner of bldg. from W

1118 #12 Dumpster containing chemicals from E

1119 #13-15 Pan of SE section of property - note stained soil from E

1122 #16 E side of property from W

1127 #17 picture of sign from N.W.

1130 Team exits to return to office.

Michael C. Fanning

Monday August 2?, 1988
1305 Arrive at [illegible] St site. TATs, Taormina, Winiecki & OSC Hammack are present
The Victoreen is giving reading 0.1 and greater before entering the site.
1320 Left site for office
1400 Arrived at Houston TAT office. TATS Taormina, Winiecki, Hogue, McLaughlin and OSC Hammack discussed how to approach the problem. Since the RAM IV and the Victoreen Thyrac did not give comparable readings, it was decided to try and get more sensitive ~~equip~~ (MCT) radiation monitoring instrumentation.
OSC Hammack contacted the Texas
, and asked for assistance.
agreed and would meet TAT at the Davis St Site at 0800 on Tuesday August 23.
Tuesday August 30, 1988
Weather - 70's rising to ~90°F, wind N, 5-10 mph
Slightly overcast.
0715 TAT Taormina arrives at E+E warehouse
0720 TAT Winiecki arrives at E+E warehouse
0730 TAT Harvey arrives at E+E warehouse
Load Suburban with SCBAs, instruments & expendables
0750 Leave for E+E office
0810 Arrive at E+E office
0815 Leave E+E office
0840 Stop for breakfast
0855 Leave for site
0920 Arrive at site pick up key from Charles [illegible] at Doggett & Workman Auto Parts opposite site

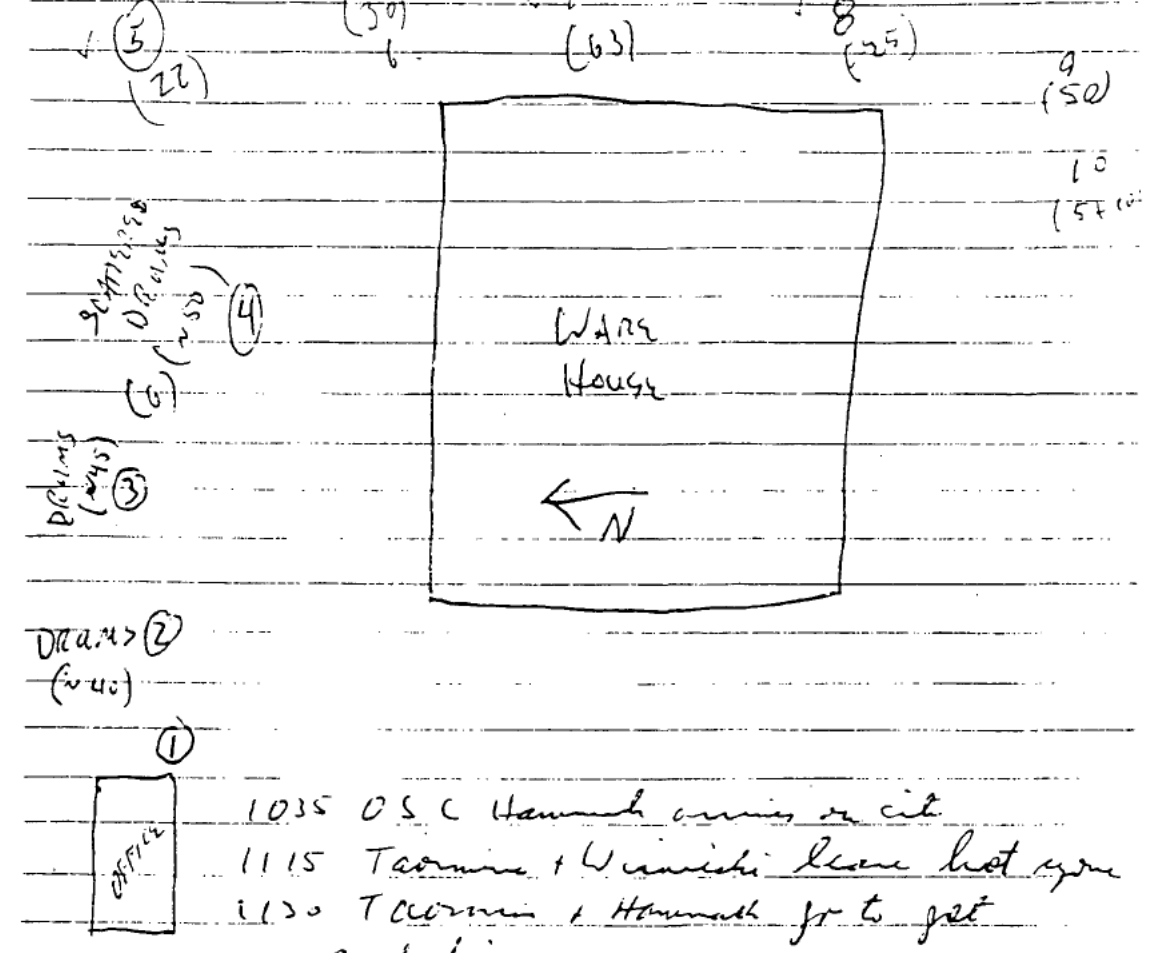
M. C. Taormina

0925 Enter site and set up at farm land
1015 HNU & PAID #

1023 143/104 98.6

1030 Tacoma, Wisarchi enter hot zone level C

	HNU	EXP/O2	RAD
1	by	by	by
2	by	by	by
3	by	by	by
4	by	by	by

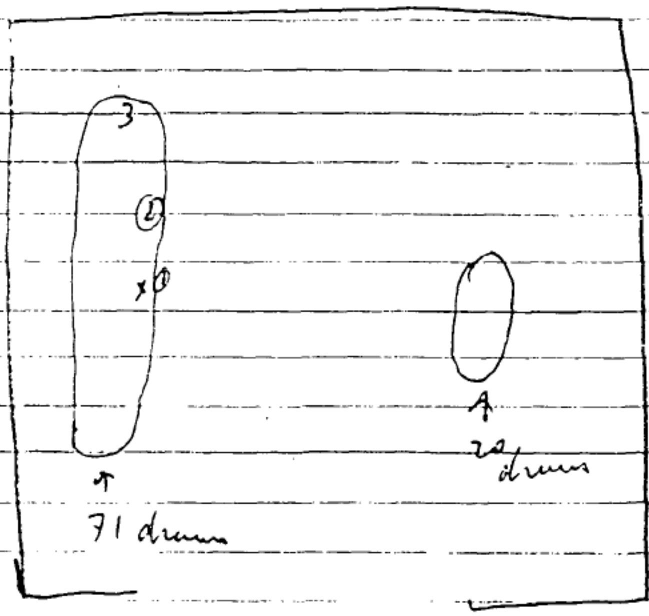


Drum (2)
(in 40)

(1)
OFFICE

1035 OSC Hannah arrives on site
1115 Tacoma + Wisarchi leave hot zone
1130 Tacoma + Hannah go to get supplies

	HNu	CGI/O2	RAD
5	(5)	BG	bg
6	bg	bg	bg
7	(5)	bg	bg
8	(3)	bg	bg
9	bg	bg	bg
10	bg	bg	bg



① rusted drum 110 ppm HNu
② [illegible] cardboard drum 15
③ near S end, open bung 50 ppm

1145 Taormina & Hammond return to site
1210 Taormina, Wisniewski & Herrera enter warehouse in Level B
1230 Taormina Wisniewski & Herrera exit warehouse
1250 put up instruments to leave for lunch

M. Taormina

15 team for lunch
1435 return to site
1445 Command survey - made sketches of drum location, took a drum count and marked drums that had any indications. Took down information that was labelled on the drums
1540 finished taking drum survey of drums outside of warehouse - took lunch
1555 TAT team entered warehouse to survey drums there
1618 exited warehouse
1630 left site
1710 arrived at C+E warehouse
1730 left warehouse

Wednesday August 31, 1988

0730 TAT Teamsmin arrive at C+E office + pick up phone, paperwork + other material
0735 Team for warehouse
0755 Arrive at warehouse TAT Wisnicki already there
0800 TAT HERRERA arrive. Last Embankment.
0830 Leave Warehouse
0820 Arrive at Site OSC Hranch on site
0830 Set up tarp + material.
0954 H+S meeting. Held by TAT Wisnicki
1030 TATS Tasmin + Wisnicki dress out in Level B to sample drums
1040 Start sample drum ~~#~~ #82 unlabelled
1047 End sampled drum #82
1055 Exit site, decon, dress down, rest
1140 Persons from Doggett + Vorhees Auto Parts entered site + removed a trailer - Mr. Valentin

removed this site

1150 Doggett personnel leave site.

1205 Decon ant level B to continue sampling drum

1215 Begin taking sample from drum # 82 for 2nd sample bottle

1222 End sample for 2nd sample bottle at drum #82 ph 13

1225 Check other drums for sample-able material must have cooled in them

1232 begin sample drum to the ~~east~~ east of drum # 32 ↓ Termed drum 32A

1237 End sample drum 32A ~~pH 13~~ (no ph)

1245 TAT Tavernia samples material ~~of~~ on ~~ground~~ concrete pad in NE section of property / TAT Wisniski samples soil near center drum in SE section of site, OSC Hammond accompanies TAT Tavernia & TAT Herrera accompanies TAT Wisniski

1252 End sample of ground material in NE & SE parts of site.

1258 ~~Off~~ back to command post drop, decon done not

1315 TATs Wisniski, Herrera & OSC Hammond leave for lunch. TAT Tavernia remains at command post.

Note substance on concrete pad is dolomite only starry.

~~Hot~~ 1610 TATs Wisniski, Herrera & OSC Hammond arrive back on site — They had trouble finding a place to fill the SCBA ~~bottles~~ tanks.

Michael Tavernia

1600 Secure area pack down. Chain of Custody & labelling complete
1650 Exit site
1730 Arrive E+E Warehouse - put up vehicle organize supplies
1750 End day
Thursday September 1, 1988
0720 TAT Tessmer arrive at warehouse
0730 TAT Wisniski arrive at warehouse
0740 TAT Herrera arrive at warehouse
0745 Leave warehouse for EPA Lab.
0815 Drop off samples at lab.
0820 Pick up cooler at E+E office
0850 Arrive at site
0855 Set up equipment
0925 H+S meeting Noted hazards connected with drum opening
0935 Scoped out which drums to open
0940 TATS Wisniski & Herrera dress out in Level B
1005 Begin Sample drum 154
1015 End Sample drum 154
1015 Begin Sample drum 146
1024 End Sample drum 146
1027 Begin Sample drum 143
1035 End Sample drum 143
1037 exit warehouse dress down-rest
1110 TATS Herrera & Wisniski dress out in Level B to finish drum sampling
1124 Begin sample drum # 104 + dup
1135 End Sample drum # 104 + dup
1140 begin Sample Vat

Mel C, Tessmer

1147 Sand is hot - pH 11.
1150 Exit warehouse drum down, decon + secure area
1215 Exit site - lunch - OSC Hammock leaves
1410 Return to Warehouse - complete chain of custody and seal coolers for delivery to EPA Lab on Friday morning
1645 TAT Taimuro leaves for home
Note: at 1440 TAT Winiecki leaves
at 1530 TAT Herrera leaves

Table 4
Informaton Compiled From Drum Labels

	Label Information	Contents	Full/Partial	Comments
1	Pelican Mudd Co. 713-952-7400			
2	Ribelin			
3	Pelican Mudd Co. 713-952-7400			
4	None			leaking
5	None			
6	Aspha Mul			
7	Mil Chem 390 Essex Ln P.O. Box 22111 Houston, TX 77227	Carbo-Tec - L		
8	N/A		Part	
9	N/A		Part	
10	N/A		Part	
11	N/A		Part	
12	N/A		Part	
13	Banner Labs Inc.			
14	N/A		Part	
15	N/A		Part	
16		Polyester Styrene Vinyl Toluene Acrylate ?		UN 1866, Un 1860 Hlth-2,Fire-3, Rx-2,PPE-1
17	N/A	Aircraft Lab Odor Control Compound		
18	N/A		Part	
19	N/A		Part	
20	N/A	posibly oil	Full	
21	N/A	black laquer		harmful Flammable liquid
22	N/A	methylimidazole		UN 2735
23	N/A	methylimidazole		UN 2735
24	Ashland Oil	N/A	N/A	N/A
25	Ashland Oil	N/A	N/A	N/A
26	N/A	paint	Full	UN 1263, ???
27	N/A	paint	Full	UN 1263, ???
28	N/A	paint	Full	UN 1263, ???
29	Ashland Oil			UN 1866
30	Ashland Oil			UN 1866
31	N/A	paint	Full	UN 1263, ???
32	N/A	paint	Full	UN 1263, ???
33	Ashland Oil			UN 1866
34	N/A		Part	open
35	Ashland Oil			
36	Ashland Oil			
37	Ashland Oil			
38	Ashland Oil			
39	Ashland Oil			
40	Ashland Oil			
41	Conoco		Part	Hazardous Waste EPA waste #189 (or 89) TXD 981544230 or

42	Ashland Oil	laquer		
43	Ashland Oil			
44	Ashland Oil			
45	PC Paint	laquer		
46	Ashland Oil shipped to Hines Pottery 10450 West Gulfbank Dr. Houston, TX			
47	Ashland Oil shipped to Hines Pottery 10450 West Gulfbank Dr. Houston, TX			suite ?, unopened
48		waste	part	rainwater
49	Reichhold Chemical Houston, TX or 525 N. Bdwy White Plains, NY	polyester resin		UN 1866, leaking flamm liq Reichhold per- formance technol.
50	Reichhold Chemical Houston, TX or 525 N. Bdwy White Plains, NY	polyester resin		UN 1866, leaking flamm liq Reichhold per- formance technol.
51	Ashland Chemical			UN 1866
52	PC Speciality System	laquer		
53	Chemtron Chemical Fresno, CA	unsaturated polyester resin vinyl toluene acrylate monomer styrene		UN 1866
54	Ashland Chemical			
55	N/A	waste polymer		solid, open
56	PC Speciality System			
57	N/A	xylol resin		sludge
58	???			UN 1760, paraffin odor waste, carr. 8
59	Imperial Chemical Speciality Chemical Manchester, England			prod code - 05198 UN 1760
60	unnumbered drums			corrosive liq
61	unnumbered drums			NOS, stain on ground
62	unnumbered drums			2 yards, odor in area
63	unnumbered drums			same
64	unnumbered drums			same
65	unnumbered drums			same
66	unnumbered drums			same
67	unnumbered drums			same
68	unnumbered drums			same
69	unnumbered drums			same
70	unnumbered drums			same
71	unnumbered drums			same
72	unnumbered drums			same
73	unnumbered drums			same
74	unnumbered drums			same

75	NL ???			
76	N/A			
77	N/A		part	
78	N/A		full	
79	N/A		full	
80	N/A		full	
81	N/A	sulfuric acid	part	UN 1790,corroding
82	N/A		full	
83	Ethyl Corp	alcohol & hydro-carbon oils		BPAL 20+
84	N/A	not oil	full	
85	N/A		full	
86	N/A		full	
87	N/A			
88	Ashland Chemical		full	UN 1933,across -

Subtitle list of companies noted.

Pelican Mudd Co. 713-952-7400 Ribelin Pelican Mudd Co. Aspha Mul			
Mil Chem 390 Essex Ln P.O. Box 22111 Houston, TX 77227	Carbo-Tec - L		
Banner Labs Inc.			
Ashland Oil Conoco	N/A	N/A Part	
PC Paint Ashland Oil shipped to Hines Pottery 10450 West Gulfbank Dr. Houston, TX	laquer		
Reichhold Chemical Houston, TX or 525 N. Bdwy White Plains, NY	polyester resin		
PC Speciality System Chemtron Chemical Fresno, CA	laquer unsaturated polyester resin vinyl toluene acrylate monomer styrene		
Imperial Chemical Speciality Chemical Manchester, England			
Ethyl Corp	alcohol & hydro-		

Subtitle list of substances noted

7	Mil Chem 390 Essex Ln P.O. Box 22111 Houston, TX 77227	Carbo-Tec - L		
16		Polyester Styrene Vinyl Toluene Acrylate ?		UN 1866, Un 1860 Hlth-2,Fire-3, Rx-2,PPE-1
17	N/A	Aircraft Lab Odor Control Compound		
20	N/A	posibly oil	Full	
21	N/A	black laquer		harmful Flammable liquid
22	N/A	methylimidazole		UN 2735
23	N/A	methylimidazole		UN 2735
26	N/A	paint	Full	UN 1263, ???
27	N/A	paint	Full	UN 1263, ???
28	N/A	paint	Full	UN 1263, ???
29	Ashland Oil			UN 1866
30	Ashland Oil			UN 1866
31	N/A	paint	Full	UN 1263, ???
32	N/A	paint	Full	UN 1263, ???

33	Ashland Oil			UN 1866
41	Conoco		Part	Hazardous Waste EPA waste #189 (or 89) TXD 981544230 or TXD 982544230
42	Ashland Oil	laquer		
45	PC Paint	laquer		
48		waste	part	rainwater
49	Reichhold Chemical Houston, TX or 525 N. Bdwy White Plains, NY	polyester resin		UN 1866, leaking flamm liq Reichhold per- formance technol.
50	Reichhold Chemical Houston, TX or 525 N. Bdwy White Plains, NY	polyester resin		UN 1866, leaking flamm liq Reichhold per- formance technol.
51	Ashland Chemical			UN 1866
52	PC Speciality System	laquer		
53	Chemtron Chemical Fresno, CA	unsaturated polyester resin vinyl toluene acrylate monomer styrene		UN 1866
55	N/A	waste polymer		solid, open
57	N/A	xylol resin		sludge
58	???			UN 1760, paraffin odor waste, carr. 8
59	Imperial Chemical Speciality Chemical Manchester, England			prod code - 05198 UN 1760
60	unnumbered drums			corrosive liq
61	unnumbered drums			NOS, stain on ground
62	unnumbered drums			2 yards, odor in area
63	unnumbered drums			same
64	unnumbered drums			same
65	unnumbered drums			same
66	unnumbered drums			same
67	unnumbered drums			same
68	unnumbered drums			same
69	unnumbered drums			same
70	unnumbered drums			same
71	unnumbered drums			same
72	unnumbered drums			same
73	unnumbered drums			same
74	unnumbered drums			same
81	N/A	sulfuric acid	part	UN 1790,corroding
83	Ethyl Corp	alcohol & hydro- carbon oils		BPAL 20+
84	N/A	not oil	full	
88	Ashland Chemical		full	UN 1933,across

ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
TFA-IC	JJ, WEST ST. DRUM SITE

SAMPLERS: (Signature)

ATTN: DR. HAMANN
6E-EI

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	DNA	METALS					REMARKS
1	8/31/88	[illegible]		X	Drum # 82, unlabelled	2	✓	✓					6-052278/6052279
2	9/1/88	1231-1157		X	Drum # 32 A	2	–	–					6-042321, 6-042322
	9/1/88	1145-1152		X	NE Pond entrance Concrete Pad	2	–	–					6-042323, 6-042324
4	9/1/88	1205-1151		X	[illegible]	2	–	–					

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[signature]	9-1-88 0817				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		Leroy Carter	9/1/88 0817		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

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ENVIRONMENTAL PROTECTION AGENCY
Office of Enforcement

REGION 6
First International Bldg., 1201 Elm St.
Dallas, Texas 75270

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
TFA-K	Jensen St. Drums

SAMPLERS: (Signature) [illegible]

ATTN: PAT HARMACK
61-EI

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	DNA	METALS					REMARKS
5	9/1/88	1005-1012		✓	Drum # 154	2	✓	✓					6-042327, 6-042328
6	9/1/88	1015-1024		✓	Drum # 146	2	✓	✓					6-042329, 6-042330
	9/1/88	1027-1035		✓	Drum # 143	2	✓	✓					6-042331, 6-042332
8	9/1/88	1124-1128		✓	Drum # 104	2	✓	✓					6-042334, 6-042337
8 DUP	9/1/88	1128-1135		✓	Drum # 104	2	✓	✓					6-042335, 6-042336
9	9/1/88	1140-1147		✓	Polypropylene VAT	2	✓	✓					6-042327, 6-042338

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
[illegible]	9/2/88 0917				
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	
		[illegible]	9/2/88 0917		

Distribution: Original Accompanies Shipment; Copy to Coordinator Field Files

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON TEXAS 77074

October 17, 1988

MEMORANDUM

SUBJECT: Notice of Intent to Dispose of Samples

FROM: Diana Ayers, Chief, Houston Branch; 6E-H

TO: Charles Gazda, Chief, Emergency Response Branch; 6E-E

The Houston Laboratory is required to dispose of all hazardous wastes we generate in a manner consistent with RCRA regulations. This includes all samples received for analysis provided we find them to contain contaminants which classify them as RCRA hazardous wastes.

I have included this memorandum in the final analytical report to serve as notice to the program that we have completed all analysis. If we have any of the original sample remaining after analysis is complete we will dispose of it within 90 days. Please note that even though original sample may be left over, it does not mean that a reanalysis of the sample may be requested since the sample has most likely exceeded its holding time and any subsequent analysis may not be valid.

If you have a need to hold these samples in custody longer than 90 days, please sign below and return this memorandum to me within the next 30 days. Also, state briefly your need to hold these samples in custody.

Thank you for your cooperation in this request.

Jensen Street Drums (8TFAKC46)

_____
Facility Name

_____
Program Manager Date

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON TEXAS 77074

MEMORANDUM

DATE: October 17, 1988

SUBJECT: Laboratory Results for Jensen St. Drums (8TFAKC46)

FROM: Diana Ayers, Chief, Houston Branch; 6E-H Dana K Payne for

TO: Charles Gazda, Chief, Emergency Response Branch; 6E-E

ATT: Pat Hamick: 6E-EF

Attached are the analytical results for the subject site. Ten samples were received on September 1, 1988 for analysis of ABN and metals(HSL).

This is a final report.

Attachments

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON TEXAS 77074

October 12, 1988

MEMORANDUM

SUBJECT: Laboratory results for Jensen Street Drum.

FROM: for M. Kendall Young
Chief
Inorganic Section

R. Ray Clark

TO: Diana G. Ayers
Chief
Houston Branch

Attached are laboratory results for the subject site. Ten (10) samples were received on September 2, 1988 to analyzed for metals.

The laboratory numbers assigned were 8TFAKC4601 through 8TFAKC4610.

This is a final report.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION VI
HOUSTON BRANCH
6608 HORNWOOD DRIVE
HOUSTON, TEXAS 77074

MEMORANDUM

Date: 9/30/88

Subject: Organic Laboratory Results for Jensen St. Drum Site (8TFAKC46)

From: Michael Daggett, Chief, Organic Lab Section; 6E-HL

To: Diana Ayers, Chief, Houston Branch; 6E-H

Attached are the Organic Laboratory results for samples 8TFAKC4601 through 8TFAKC4610. These samples were analyzed for ABNs only.

This is a final report.

Attachments

Date: 10/14/88

Appendix 6

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: BTFAKC46 Date Recvd: 09/01/88 Date Collected: 08/31/88
Sample Number: 1 Time Recvd: 08:30 Time Collected: 10:47

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 82, unlabelled Sta # 1
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

ATTACHMENT 1

ORGANIC ANALYSIS DATA

6ES HL SAMPLE NO.: BTFAKC46-01

DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER

ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L		COMPOUND	ug/L
Phenol	nd	dl=440	Acenaphthene	nd dl=220
bis(2-Chloroethyl) Ether	nd	dl=220	2,4-Dinitrophenol	nd dl=3300
2-Chlorophenol	nd	dl=440	4-Nitrophenol	nd dl=880
1,3-Dichlorobenzene	nd	dl=220	Dibenzofuran	nd dl=220
1,4-Dichlorobenzene	nd	dl=220	2,4-Dinitrotoluene	nd dl=660
Benzyl Alcohol	nd	dl=440	2,6-Dinitrotoluene	nd dl=660
1,2-Dichlorobenzene	nd	dl=220	Diethylphthalate	nd dl=220
2-Methylphenol	nd	dl=660	4Chlorophenylphenyl Ether	nd dl=880
bis(2-chloroisopropyl)Ether	nd	dl=220	Fluorene	nd dl=220
4-Methylphenol	nd	dl=660	4-Nitroaniline	nd dl=880
N-Nitroso-Di-n-Propylamine	nd	dl=660	4,6-Dinitro-2-Methylphenol	nd dl=2200
Hexachloroethane	nd	dl=220	N-Nitrosodiphenylamine	nd dl=440
Nitrobenzene	nd	dl=220	4-Bromophenylphenyl Ether	nd dl=880
Isophorone	nd	dl=440	Hexachlorobenzene	nd dl=220
2-Nitrophenol	nd	dl=1100	Pentachlorophenol	nd dl=1650
2,4-Dimethylphenol	nd	dl=660	Phenanthrene	nd dl=220
Benzoic Acid	nd	dl=1100	Anthracene	nd dl=220
bis(2-Chloroethoxy)Methane	nd	dl=220	Di-n-Butylphthalate	nd dl=220
2,4-Dichlorophenol	nd	dl=660	Fluoranthene	nd dl=220
1,2,4-Trichlorobenzene	nd	dl=220	Benzidine	nd dl=2200
Naphthalene	nd	dl=220	Pyrene	nd dl=220
4-Chloroaniline	nd	dl=440	Butylbenzylphthalate	nd dl=440
Hexachlorobutadiene	nd	dl=220	3,3'-Dichlorobenzidine	nd dl=1100
4-Chloro-3-Methylphenol	nd	dl=880	Benzo(a)Anthracene	nd dl=880
2-Methylnaphthalene	nd	dl=220	bis(2-Ethylhexyl)Phthalate	nd dl=440
Hexachlorocyclopentadiene	nd	dl=1100	Chrysene	nd dl=880
2,4,6-Trichlorophenol	nd	dl=660	Di-n-Octyl Phthalate	nd dl=440
2,4,5-Trichlorophenol	nd	dl=660	Benzo(b)Fluoranthene	nd dl=880
2-Chloronaphthalene	nd	dl=220	Benzo(k)Fluoranthene	nd dl=880
2-Nitroaniline	nd	dl=880	Benzo(a)Pyrene	nd dl=880
Dimethylphthalate	nd	dl=220	Indeno(1,2,3-cd) Pyrene	nd dl=880
Acenaphthylene	nd	dl=220	Dibenzo(a,h)Anthracene	nd dl=880
3-Nitroaniline	nd	dl=880	Benzo(g,h,i)Perylene	nd dl=880

Attachment 1

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-01 DATE REPORTED: 9/30/88

SAMPLE TYPE:WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/l)	COMPOUND NAME
384		4,280	UNKNOWN
635		356,000	UNKNOWN

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-01	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	*	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	ND	10	UG/L
CADMIUM	18	10	UG/L
CHROMIUM	ND	20	UG/L
COPPER	388	40	UG/L
NICKEL	ND	40	UG/L
LEAD	ND	60	UG/L
ZINC	661	10	UG/L
ALUMINUM	ND	200	UG/L
BARIUM	ND	20	UG/L
COBALT	ND	40	UG/L
IRON	83	50	UG/L
MANGANESE	ND	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	520	120	UG/L
SODIUM	ND	1000	UG/L
POTASSIUM	ND	2000	UG/L
CALCIUM	ND	300	UG/L
MAGNESIUM	ND	300	UG/L

* : UNABLE TO ANALYZE DUE TO STRONG INTERFERENCE

ND: NOT DETECTED

Date: 10/14/88

Appendix 2

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number:	8TFAKC46	Date Recvd:	09/01/88	Date Collected:	08/31/88
Sample Number:	2	Time Recvd:	08:30	Time Collected:	12:37

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 32A, Sta # 2
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 2

ORGANIC ANALYSIS DATA

EPA SAMPLE NO.: OTTAKC46-02 DATE REPORTED: 9/30/00

SAMPLE TYPE: WATER ANALYST: MARVELYN HUMPHREY

TCL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L		COMPOUND	ug/L
Phenol	nd dl=100		Acenaphthene	nd dl= 50
bis(2-Chloroethyl) Ether	nd dl= 50		2,4-Dinitrophenol	nd dl=750
2-Chlorophenol	nd dl=100		4-Nitrophenol	nd dl=200
1,3-Dichlorobenzene	nd dl= 50		Dibenzofuran	nd dl= 50
1,4-Dichlorobenzene	nd dl= 50		2,4-Dinitrotoluene	nd dl=150
Benzyl Alcohol	17,800		2,6-Dinitrotoluene	nd dl=150
1,2-Dichlorobenzene	nd dl= 50		Diethylphthalate	nd dl= 50
2-Methylphenol	nd dl=150		4-Chlorophenylphenyl Ether	nd dl=200
bis(2-chloroisopropyl)Ether	nd dl= 50		Fluorene	nd dl= 50
4-Methylphenol	nd dl=150		4-Nitroaniline	nd dl=200
N-Nitroso-Di-n-Propylamine	nd dl=150		4,6-Dinitro-2-Methylphenol	nd dl=500
Hexachloroethane	nd dl= 50		N-Nitrosodiphenylamine	nd dl=100
Nitrobenzene	nd dl= 50		4-Bromophenylphenyl Ether	nd dl=200
Isophorone	nd dl=100		Hexachlorobenzene	nd dl= 50
2-Nitrophenol	nd dl=250		Pentachlorophenol	nd dl=375
2,4-Dimethylphenol	366		Phenanthrene	nd dl= 50
Benzoic Acid	nd dl=250		Anthracene	nd dl= 50
bis(2-Chloroethoxy)Methane	nd dl= 50		Di-n-Butylphthalate	nd dl= 50
2,4-Dichlorophenol	nd dl=150		Fluoranthene	nd dl= 50
1,2,4-trichlorobenzene	nd dl= 50		Benzidine	nd dl=500
Naphthalene	nd dl= 50		Pyrene	nd dl= 50
4-Chloroaniline	nd dl=100		Butylbenzylphthalate	nd dl=100
Hexachlorobutadiene	nd dl= 50		3,3'-Dichlorobenzidine	nd dl=250
4-Chloro-3-Methylphenol	nd dl=200		Benzo(a)Anthracene	nd dl=200
2-Methylnaphthalene	nd dl= 50		bis-(2-Ethylhexyl)Phthalate	235
Hexachlorocyclopentadiene	nd dl=250		Chrysene	nd dl=200
2,4,6-Trichlorophenol	nd dl=150		Di-n-Octyl Phthalate	nd dl=100
2,4,5-Trichlorophenol	nd dl=150		Benzo(b)Fluoranthene	nd dl=200
2-Chloronaphthalene	nd dl= 50		Benzo(k)Fluoranthene	nd dl=200
2-Nitroaniline	nd dl=200		Benzo(a)Pyrene	nd dl=200
DimethylPhthalate	nd dl= 50		Indeno(1,2,3-cd) Pyrene	nd dl=200
Acenaphthylene	nd dl= 50		Dibenzo(a,h)Anthracene	nd dl=200
3-Nitroaniline	nd dl=200		Benzo(g,h,i)Perylene	nd dl=200

Attachment 2

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-02 DATE REPORTED: 9/30/88

SAMPLE TYPE:WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/l)	COMPOUND NAME
115	111762	16,500	2-BUTOXY-ETHANOL
150		140	UNKNOWN
399		700	UNKNOWN
414		435	UNKNOWN
436	149575	340	2-ETHYL-HEXANOIC ACID
459		750	UNKNOWN
464	112345	365	2-(2-BUTOXYETHOXY)-ETHANOL
495		600	UNKNOWN
✓ 515	18636341	515	BENZOIC ACID, ammonium salt
568	99047	125	3-METHYL, BENZOIC ACID
582		500	UNKNOWN

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-02	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	ND	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	ND	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	106	20	UG/L
COPPER	88	40	UG/L
NICKEL	52	40	UG/L
LEAD	269	60	UG/L
ZINC	448	10	UG/L
ALUMINUM	ND	200	UG/L
BARIUM	122	20	UG/L
COBALT	1800	40	UG/L
IRON	20700	50	UG/L
MANGANESE	2990	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	356	120	UG/L
SODIUM	124000	1000	UG/L
POTASSIUM	20100	2000	UG/L
CALCIUM	52900	300	UG/L
MAGNESIUM	424000	300	UG/L

ND: NOT DETECTED

Date: 10/14/88

Appendix 3

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/01/88 Date Collected: 08/31/88
Sample Number: 3 Time Recvd: 08:30 Time Collected: 12:52

Source: Jensen St. Drum Site Tag Number:
Site Description: NE ground material, Sta # 3
Sample Type: SOIL
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 3

ORGANIC ANALYSIS DATA

SES-HL SAMPLE NO.: STFAKC46-03 DATE REPORTED: 9/30/88

SAMPLE TYPE: SOIL ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/KG		COMPOUND	ug/KG	
Phenol	nd	dl= 56000	Acenaphthene	nd	dl= 28000
bis(2-Chloroethyl) Ether	nd	dl= 28000	2,4-Dinitrophenol	nd	dl= 42000
2-Chlorophenol	nd	dl= 56000	4-Nitrophenol	nd	dl=112000
1,3-Dichlorobenzene	nd	dl= 28000	Dibenzofuran	nd	dl= 28000
1,4-Dichlorobenzene	nd	dl= 28000	2,4-Dinitrotoluene	nd	dl= 84000
Benzyl Alcohol	nd	dl= 56000	2,6-Dinitrotoluene	nd	dl= 84000
1,2-Dichlorobenzene	nd	dl= 28000	Diethylphthalate	nd	dl= 28000
2-Methylphenol	nd	dl= 84000	4-Chlorophenylphenyl Ether	nd	dl=112000
bis(2-chloroisopropyl)Ether	nd	dl= 28000	Fluorene	nd	dl= 28000
4-Methylphenol	nd	dl= 84000	4-Nitroaniline	nd	dl=112000
N-Nitroso-Di-n-Propylamine	nd	dl= 84000	4,6-Dinitro-2-Methylphenol	nd	dl= 28000
Hexachloroethane	nd	dl= 28000	N-Nitrosodiphenylamine	nd	dl= 56000
Nitrobenzene	nd	dl= 28000	4-Bromophenylphenyl Ether	nd	dl=112000
Isophorone	nd	dl= 56000	Hexachlorobenzene	nd	dl= 28000
2-Nitrophenol	nd	dl=140000	Pentachlorophenol	nd	dl=210000
2,4-Dimethylphenol	nd	dl= 84000	Phenanthrene	nd	dl= 28000
Benzoic Acid	nd	dl=140000	Anthracene	nd	dl= 28000
bis(2-Chloroethoxy)Methane	nd	dl= 28000	Di-n-Butylphthalate	nd	dl= 28000
2,4-Dichlorophenol	nd	dl= 84000	Fluoranthene	nd	dl= 28000
1,2,4-trichlorobenzene	nd	dl= 28000	Benzidine	nd	dl= 28000
Naphthalene	nd	dl= 28000	Pyrene	nd	dl= 28000
4-Chloroaniline	nd	dl= 56000	Butylbenzylphthalate	nd	dl= 56000
Hexachlorobutadiene	nd	dl= 28000	3,3'-Dichlorobenzidine	nd	dl=140000
4-Chloro-3-Methylphenol	nd	dl= 11200	Benzo(a)Anthracene	nd	dl=112000
2-Methylnaphthalene	28,500		bis(2-Ethylhexyl)Phthalate	nd	dl= 56000
Hexachlorocyclopentadiene	nd	dl=140000	Chrysene	nd	dl=112000
2,4,6-Trichlorophenol	nd	dl= 84000	Di-n-Octyl Phthalate	nd	dl= 56000
2,4,5-Trichlorophenol	nd	dl= 84000	Benzo(b)Fluoranthene	nd	dl=112000
2-Chloronaphthalene	nd	dl= 28000	Benzo(k)Fluoranthene	nd	dl=112000
2-Nitroaniline	nd	dl=112000	Benzo(a)Pyrene	nd	dl=112000
DimetnylPhthalate	nd	dl= 28000	Indeno(1,2,3-cd) Pyrene	nd	dl=112000
Acenaphthylene	nd	dl= 28000	Dibenzo(a,h)Anthracene	nd	dl=112000
3-Nitroaniline	nd	dl=112000	Benzo(g,h,i)Perylene	nd	dl=112000

Attachment 3

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: STFAKC46-03 DATE REPORTED: 9/30/88

SAMPLE TYPE: SOIL

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/Kg)	COMPOUND NAME
			THIS SAMPLE CONTAINS A VARIETY OF UNKNOWN
			HYDROCARBONS RANGING FROM SCAN # 359 TO SCAN # 1263.

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-03	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	SOIL	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	4.1	MG/KG
SELENIUM	ND	4.2	MG/KG
THALLIUM	ND	1.3	MG/KG
MERCURY	ND	0.1	MG/KG
SILVER	ND	1.1	MG/KG
BERYLLIUM	3	0.5	MG/KG
CADMIUM	1	0.5	MG/KG
CHROMIUM	17	1.1	MG/KG
COPPER	34	2.1	MG/KG
NICKEL	17	2.1	MG/KG
LEAD	158	3.2	MG/KG
ZINC	381	0.5	MG/KG
ALUMINUM	2360	11	MG/KG
BARIUM	182	1.1	MG/KG
COBALT	4	2.1	MG/KG
IRON	27000	2.7	MG/KG
MANGANESE	181	0.5	MG/KG
VANADIUM	ND	3.2	MG/KG
ANTIMONY	13	6.4	MG/KG
SODIUM	295	53	MG/KG
POTASSIUM	148	107	MG/KG
CALCIUM	28700	16	MG/KG
MAGNESIUM	1520	16	MG/KG

ND: NOT DETECTED

CONCENTRATIONS REPORTED ON A DRY WEIGHT BASIS

Date: 10/14/88

Appendix 4

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number:	8TFAKC46	Date Recvd:	09/01/88	Date Collected:	08/31/88
Sample Number:	4	Time Recvd:	08:30	Time Collected:	12:52

Source: Jensen St. Drum Site Tag Number:
Site Description: SE soil, caustic drums Sta # 4
Sample Type: SOIL
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 4

ORGANIC ANALYSIS DATA

SES-HL SAMPLE NO.: STFAKC46-04 DATE REPORTED: 9/30/88

SAMPLE TYPE: SOIL ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/KG		COMPOUND	ug/KG	
Phenol	nd	dl= 68000	Acenaphthene	nd	dl= 34000
Bis(2-Chloroethyl) Ether	nd	dl= 34000	2,4-Dinitrophenol	nd	dl=510000
2-Chlorophenol	nd	dl= 68000	4-Nitrophenol	nd	dl=136000
1,3-Dichlorobenzene	nd	dl= 34000	Dibenzofuran	nd	dl= 34000
1,4-Dichlorobenzene	nd	dl= 34000	2,4-Dinitrotoluene	nd	dl=102000
Benzyl Alcohol	nd	dl= 68000	2,6-Dinitrotoluene	nd	dl=102000
1,2-Dichlorobenzene	nd	dl= 34000	Diethylphthalate	nd	dl= 34000
2-Methylphenol	nd	dl=102000	4-Chlorophenylphenyl Ether	nd	dl=136000
bis(2chloroisopropyl)Ether	nd	dl= 34000	Fluorene	nd	dl= 34000
4-Methylphenol	nd	dl=102000	4-Nitroaniline	nd	dl=136000
N-Nitroso-Di-n-Propylamine	nd	dl=102000	4,6-Dinitro-2-Methylphenol	nd	dl=340000
Hexachloroethane	nd	dl= 34000	N-Nitrosodiphenylamine	nd	dl= 68000
Nitrobenzene	nd	dl= 34000	4-Bromophenylphenyl Ether	nd	dl=136000
Isophorone	nd	dl= 68000	Hexachlorobenzene	nd	dl= 34000
2-Nitrophenol	nd	dl=107000	Pentachlorophenol	nd	dl=255000
2,4-Dimethylphenol	nd	dl=102000	Phenanthrene	nd	dl= 34000
Benzoic Acid	nd	dl=107000	Anthracene	nd	dl= 34000
bis(2-Chloroethoxy)Methane	nd	dl= 34000	Di-n-Butylphthalate	nd	dl= 34000
2,4-Dichlorophenol	nd	dl=102000	Fluoranthene	nd	dl= 34000
1,2,4-Trichlorobenzene	nd	dl= 34000	Benzidine	nd	dl=340000
Naphthalene	nd	dl= 34000	Pyrene	nd	dl= 34000
4-Chloroaniline	nd	dl= 68000	Butylbenzylphthalate	nd	dl= 68000
Hexachlorobutadiene	nd	dl= 34000	3,3'-Dichlorobenzidine	nd	dl=170000
4-Chloro-3-Methylphenol	nd	dl=136000	Benzo(a)Anthracene	nd	dl=136000
2-Methylnaphthalene	nd	dl= 34000	bis(2Ethylhexyl)Phthalate	nd	dl= 68000
Hexachlorocyclopentadiene	nd	dl=170000	Chrysene	nd	dl=136000
2,4,6-Trichlorophenol	nd	dl=102000	Di-n-Octyl Phthalate	nd	dl= 68000
2,4,5-Trichlorophenol	nd	dl=102000	Benzo(b)Fluoranthene	nd	dl=136000
2-Chloronaphthalene	nd	dl= 34000	Benzo(k)Fluoranthene	nd	dl=136000
2-Nitroaniline	nd	dl=136000	Benzo(a)Pyrene	nd	dl=136000
DimethylPhthalate	nd	dl= 34000	Indeno(1,2,3-cd) Pyrene	nd	dl=136000
Acenaphthylene	nd	dl= 34000	Dibenzo(a,h)Anthracene	nd	dl=136000
3-Nitroaniline	nd	dl=136000	Benzo(g,h,i)Perylene	nd	dl=136000

Attachment 4

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-04 DATE REPORTED: 9/30/88

SAMPLE TYPE: SOIL

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/Kg)	COMPOUND NAME
			THIS SAMPLE CONTAINS A VARIETY OF UNKNOWN
			HYDROCARBONS RANGING FROM SCAN # 357 TO SCAN # 1306.

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-04	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	SOIL	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	4.6	MG/KG
SELENIUM	ND	4.7	MG/KG
THALLIUM	ND	1.5	MG/KG
MERCURY	0.4	0.1	MG/KG
SILVER	ND	0.8	MG/KG
BERYLLIUM	1	0.4	MG/KG
CADMIUM	1	0.4	MG/KG
CHROMIUM	8	0.8	MG/KG
COPPER	18	1.5	MG/KG
NICKEL	5	1.5	MG/KG
LEAD	127	2.3	MG/KG
ZINC	333	0.4	MG/KG
ALUMINUM	2660	7.6	MG/KG
BARIUM	117	0.8	MG/KG
COBALT	2	1.5	MG/KG
IRON	4610	1.9	MG/KG
MANGANESE	445	0.4	MG/KG
VANADIUM	7	2.3	MG/KG
ANTIMONY	ND	4.5	MG/KG
SODIUM	1890	38	MG/KG
POTASSIUM	299	76	MG/KG
CALCIUM	179000	11	MG/KG
MAGNESIUM	2950	11	MG/KG

ND: NOT DETECTED

CONCENTRATIONS REPORTED ON A DRY WEIGHT BASIS

Date: 10/13/88

Appendix 5

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/02/88 Date Collected: 09/01/88
Sample Number: 5 Time Recvd: 08:47 Time Collected: 10:12

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 154 Sta # 5
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-05 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L	COMPOUND	ug/L
Phenol	nd dl=20	Acenaphthene	nd dl= 10
bis(2-Chloroethyl) Ether	nd dl=10	2,4-Dinitrophenol	nd dl=150
2-Chlorophenol	nd dl=20	4-Nitrophenol	nd dl= 20
1,3-Dichlorobenzene	nd dl=10	Dibenzofuran	nd dl= 10
1,4-Dichlorobenzene	nd dl=10	2,4-Dinitrotoluene	nd dl= 30
Benzyl Alcohol	nd dl=20	2,6-Dinitrotoluene	nd dl= 30
1,2-Dichlorobenzene	nd dl=10	Diethylphthalate	nd dl= 10
2-Methylphenol	nd dl=30	4-Chlorophenylphenyl Ether	nd dl= 40
bis(2-chloroisopropyl)Ether	nd dl=10	Fluorene	nd dl= 10
4-Methylphenol	nd dl=30	4-Nitroaniline	nd dl= 40
N-Nitroso-Di-n-Propylamine	nd dl=30	4,6-Dinitro-2-Methylphenol	nd dl=100
Hexachloroethane	nd dl=10	N-Nitrosodiphenylamine	nd dl= 20
Nitrobenzene	nd dl=10	4-Bromophenylphenyl Ether	nd dl= 40
Isophorone	nd dl=20	Hexachlorobenzene	nd dl= 10
2-Nitrophenol	nd dl=50	Pentachlorophenol	nd dl= 75
2,4-Dimethylphenol	nd dl=30	Phenanthrene	25
Benzoic Acid	nd dl=50	Anthracene	nd dl= 10
bis(2-Chloroethoxy)Methane	nd dl=10	Di-n-Butylphthalate	nd dl= 10
2,4-Dichlorophenol	nd dl=30	Fluoranthene	23
1,2,4-trichlorobenzene	nd dl=10	Benzidine	nd dl=100
Naphthalene	210	Pyrene	13
4-Chloroaniline	nd dl=20	Butylbenzylphthalate	nd dl= 20
Hexachlorobutadiene	nd dl=10	3,3'-Dichlorobenzidine	nd dl= 50
4-Chloro-3-Methylphenol	nd dl=40	Benzo(a)Anthracene	nd dl= 40
2-Methylnaphthalene	56	bis-(2-Ethylhexyl)Phthalate	nd dl= 20
Hexachlorocyclopentadiene	nd dl=50	Chrysene	nd dl= 40
2,4,6-Trichlorophenol	nd dl=30	Di-n-Octyl Phthalate	nd dl= 20
2,4,5-Trichlorophenol	nd dl=30	Benzo(b)Fluoranthene	nd dl= 40
2-Chloronaphthalene	nd dl=10	Benzo(k)Fluoranthene	nd dl= 40
2-Nitroaniline	nd dl=40	Benzo(a)Pyrene	nd dl= 40
DimethylPhthalate	nd dl=10	Indeno(1,2,3-cd) Pyrene	nd dl= 40
Acenaphthylene	nd dl=10	Dibenzo(a,h)Anthracene	nd dl= 40
3-Nitroaniline	nd dl=40	Benzo(g,h,i)Perylene	nd dl= 40

Attachment 5

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-05 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/L)	COMPOUND NAME
			THIS SAMPLE CONTAINS A VARIETY OF UNKNOWN
			HYDROCARBONS RANGING FROM SCAN # 51 TO SCAN # 467.

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-05	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	*	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	ND	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	264	20	UG/L
COPPER	9760	40	UG/L
NICKEL	50	40	UG/L
LEAD	57300	60	UG/L
ZINC	1770	10	UG/L
ALUMINUM	722	200	UG/L
BARIUM	144	20	UG/L
COBALT	3190	40	UG/L
IRON	7960	50	UG/L
MANGANESE	132	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	ND	120	UG/L
SODIUM	2310	1000	UG/L
POTASSIUM	ND	2000	UG/L
CALCIUM	1610	300	UG/L
MAGNESIUM	8150	300	UG/L

* : UNABLE TO ANALYZE DUE TO STRONG INTERFERENCE

ND: NOT DETECTED

Date: 10/13/88

Appendix 6

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/02/88 Date Collected: 09/01/88
Sample Number: 6 Time Recvd: 08:47 Time Collected: 10:24

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 146 Sta # 6
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 6

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-06 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L	COMPOUND	ug/L
Phenol	nd dl=28	Acenaphthene	nd dl= 14
bis(2-Chloroethyl) Ether	nd dl=14	2,4-Dinitrophenol	nd dl=210
2-Chlorophenol	nd dl=28	4-Nitrophenol	nd dl= 56
1,3-Dichlorobenzene	nd dl=14	Dibenzofuran	nd dl= 14
1,4-Dichlorobenzene	nd dl=14	2,4-Dinitrotoluene	nd dl= 42
Benzyl Alcohol	nd dl=28	2,6-Dinitrotoluene	nd dl= 42
1,2-Dichlorobenzene	nd dl=14	Diethylphthalate	nd dl= 14
2-Methylphenol	nd dl=42	4-Chlorophenylphenyl Ether	nd dl= 56
bis(2-chloroisopropyl)Ether	nd dl=14	Fluorene	nd dl= 14
4-Methylphenol	70	4-Nitroaniline	nd dl= 56
N-Nitroso-Di-n-Propylamine	nd dl=42	4,6-Dinitro-2-Methylphenol	nd dl=140
Hexachloroethane	nd dl=14	N-Nitrosodiphenylamine	nd dl= 28
Nitrobenzene	nd dl=14	4-Bromophenylphenyl Ether	nd dl= 56
Isophorone	nd dl=28	Hexachlorobenzene	nd dl= 14
2-Nitrophenol	nd dl=70	Pentachlorophenol	nd dl=105
2,4-Dimethylphenol	1370	Phenanthrene	nd dl= 14
Benzoic Acid	nd dl=70	Anthracene	nd dl= 14
bis(2-Chloroethoxy)Methane	nd dl=14	Di-n-Butylphthalate	nd dl= 14
2,4-Dichlorophenol	nd dl=42	Fluoranthene	nd dl= 14
1,2,4-trichlorobenzene	nd dl=14	Benzidine	nd dl=140
Naphthalene	nd dl=14	Pyrene	nd dl= 14
4-Chloroaniline	nd dl=28	Butylbenzylphthalate	nd dl= 28
Hexachlorobutadiene	nd dl=14	3,3'-Dichlorobenzidine	nd dl= 70
4-Chloro-3-Methylphenol	nd dl=56	Benzo(a)Anthracene	nd dl= 56
2-Methylnaphthalene	nd dl=14	bis-(2-Ethylhexyl)Phthalate	nd dl= 28
Hexachlorocyclopentadiene	nd dl=70	Chrysene	nd dl= 56
2,4,6-Trichlorophenol	nd dl=42	Di-n-Octyl Phthalate	nd dl= 28
2,4,5-Trichlorophenol	nd dl=42	Benzo(b)Fluoranthene	nd dl= 56
2-Chloronaphthalene	nd dl=14	Benzo(k)Fluoranthene	nd dl= 56
2-Nitroaniline	nd dl=56	Benzo(a)Pyrene	nd dl= 56
DimethylPhthalate	nd dl=14	Indeno(1,2,3-cd) Pyrene	nd dl= 56
Acenaphthylene	nd dl=14	Dibenzo(a,h)Anthracene	nd dl= 56
3-Nitroaniline	nd dl=56	Benzo(g,h,i)Perylene	nd dl= 56

Attachment 6

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-06 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST. CONC (ug/l)	COMPOUND NAME
310	98862	23	1-PHENYL-ETHANONE
364	95874	43	2,5-DIMETHYL-PHENOL
398		126	UNKNOWN
307	90006	87	2-ETHYL-PHENOL
549		37	UNKNOWN
1058		50	UNKNOWN
1382		27	UNKNOWN
1504		27	UNKNOWN

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAEC46-06	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	ND	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	ND	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	ND	20	UG/L
COPPER	50	40	UG/L
NICKEL	ND	40	UG/L
LEAD	ND	60	UG/L
ZINC	302	10	UG/L
ALUMINUM	ND	200	UG/L
BARIUM	74	20	UG/L
COBALT	ND	40	UG/L
IRON	9460	50	UG/L
MANGANESE	95	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	ND	120	UG/L
SODIUM	26800	1000	UG/L
POTASSIUM	5130	2000	UG/L
CALCIUM	14300	300	UG/L
MAGNESIUM	1150	300	UG/L

ND: NOT DETECTED

1.3

Date: 10/13/88

Appendix 7

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/02/88 Date Collected: 09/01/88
Sample Number: 7 Time Recvd: 08:47 Time Collected: 10:35

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 143 Sta # 7
Sample Type: OIL
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

GANIC ANALYSIS DATA

17 DATE REPORTED: 9/30/88

ATE REPORTED: 9/30/88

ALYST: MARVELYN HUMPHREY

METHOD 625

OUND	ug/Kg
ene	nd dl= 10000
ophenol	nd dl=150000
enol	nd dl= 40000
an	nd dl= 10000
otoluene	nd dl= 30000
otoluene	nd dl= 30000
halate	nd dl= 10000
enylphenyl Ether	nd dl= 40000
.....	nd dl= 10000
line	nd dl= 40000
o-2-Methylphenol	nd dl=100000
iphenylamine	nd dl= 20000
nylphenyl Ether .	nd dl= 40000
benzene	nd dl= 10000
ophenol	nd dl= 75000
ne	nd dl= 10000
.....	nd dl= 10000
hthalate	nd dl= 10000
ne	nd dl= 10000
.....	nd dl=100000
.....	nd dl= 10000
phthalate	nd dl= 20000
robenzidine	nd dl= 50000
hracene	nd dl= 40000
lhexyl)Phthalate	nd dl= 20000
.....	nd dl= 40000
Phthalate	nd dl= 20000
oranthene	nd dl= 40000
oranthene	nd dl= 40000
ene	nd dl= 40000
3-cd) Pyrene ...	nd dl= 40000
Anthracene	nd dl= 40000
Perylene	nd dl= 40000

COMPOUNDS BY METHODS 625

COMPOUND NAME
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
UNKNOWN
2,4,6-TRIS[(DIMETHYLAMINO)METHYL] PHENOL
UNKNOWN
UNKNOWN
UNKNOWN

OMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST
EY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA
WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-07	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	OIL	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	4.5	MG/KG
SELENIUM	ND	4.7	MG/KG
THALLIUM	ND	1.5	MG/KG
MERCURY	ND	0.1	MG/KG
SILVER	ND	1.0	MG/KG
BERYLLIUM	ND	0.5	MG/KG
CADMIUM	ND	0.5	MG/KG
CHROMIUM	ND	1.0	MG/KG
COPPER	ND	2.0	MG/KG
NICKEL	ND	2.0	MG/KG
LEAD	ND	3.0	MG/KG
ZINC	6	0.5	MG/KG
ALUMINUM	ND	9.9	MG/KG
BARIUM	ND	1.0	MG/KG
COBALT	ND	2.0	MG/KG
IRON	48	2.5	MG/KG
MANGANESE	ND	0.5	MG/KG
VANADIUM	ND	3.0	MG/KG
ANTIMONY	ND	5.9	MG/KG
SODIUM	ND	49	MG/KG
POTASSIUM	ND	99	MG/KG
CALCIUM	ND	15	MG/KG
MAGNESIUM	ND	15	MG/KG

ND: NOT DETECTED

Date: 10/13/88

Appendix 8

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/02/88 Date Collected: 09/01/88
Sample Number: 8 Time Recvd: 08:47 Time Collected: 11:28

Source: Jensen St. Drum Site Tag Number:
Site Description: Drum # 104 Sta # 8
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 8

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-08 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L		COMPOUND	ug/L	
Phenol	nd	dl= 600	Acenaphthene	nd	dl= 300
bis(2-Chloroethyl) Ether	nd	dl= 300	2,4-Dinitrophenol	nd	dl=4500
2-Chlorophenol	nd	dl= 600	4-Nitrophenol	nd	dl=1200
1,3-Dichlorobenzene	nd	dl= 300	Dibenzofuran	nd	dl= 300
1,4-Dichlorobenzene	nd	dl= 300	2,4-Dinitrotoluene	nd	dl= 900
Benzyl Alcohol	nd	dl= 600	2,6-Dinitrotoluene	nd	dl= 900
1,2-Dichlorobenzene	nd	dl= 300	Diethylphthalate	nd	dl= 300
2-Methylphenol	nd	dl= 900	4-Chlorophenylphenyl Ether	nd	dl=1200
bis(2-chloroisopropyl)Ether	nd	dl= 300	Fluorene	nd	dl= 300
4-Methylphenol	nd	dl= 900	4-Nitroaniline	nd	dl=1200
N-Nitroso-Di-n-Propylamine	nd	dl= 900	4,6-Dinitro-2-Methylphenol	nd	dl=3000
Hexachloroethane	nd	dl= 300	N-Nitrosodiphenylamine	nd	dl= 600
Nitrobenzene	nd	dl= 300	4-Bromophenylphenyl Ether	nd	dl=1200
Isophorone	nd	dl= 600	Hexachlorobenzene	nd	dl= 300
2-Nitrophenol	nd	dl=1500	Pentachlorophenol	nd	dl=2250
2,4-Dimethylphenol	nd	dl= 900	Phenanthrene	nd	dl= 300
Benzoic Acid	nd	dl=1500	Anthracene	nd	dl= 300
bis(2-Chloroethoxy)Methane	nd	dl= 300	Di-n-Butylphthalate	nd	dl= 300
2,4-Dichlorophenol	nd	dl= 900	Fluoranthene	nd	dl= 300
1,2,4-trichlorobenzene	nd	dl= 300	Benzidine	nd	dl=3000
Naphthalene	nd	dl= 300	Pyrene	nd	dl= 300
4-Chloroaniline	nd	dl= 600	Butylbenzylphthalate	nd	dl= 600
Hexachlorobutadiene	nd	dl= 300	3,3'-Dichlorobenzidine	nd	dl=1500
4-Chloro-3-Methylphenol	nd	dl=1200	Benzo(a)Anthracene	nd	dl=1200
2-Methylnaphthalene	nd	dl= 300	bis-(2-Ethylhexyl)Phthalate	nd	dl= 600
Hexachlorocyclopentadiene	nd	dl=1500	Chrysene	nd	dl=1200
2,4,6-Trichlorophenol	nd	dl= 900	Di-n-Octyl Phthalate	nd	dl= 600
2,4,5-Trichlorophenol	nd	dl= 900	Benzo(b)Fluoranthene	nd	dl=1200
2-Chloronaphthalene	nd	dl= 300	Benzo(k)Fluoranthene	nd	dl=1200
2-Nitroaniline	nd	dl=1200	Benzo(a)Pyrene	nd	dl=1200
DimethylPhthalate	nd	dl= 300	Indeno(1,2,3-cd) Pyrene	nd	dl=1200
Acenaphthylene	nd	dl= 300	Dibenzo(a,h)Anthracene	nd	dl=1200
3-Nitroaniline	nd	dl=1200	Benzo(g,h,i)Perylene	nd	dl=1200

Attachment 8

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: BTFAKC46-08 DATE REPORTED: 9/30/88

SAMPLE TYPE:WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST.CONC (ug/l)	COMPOUND NAME
10	141797	36000	4-METHYL-3-PENTEN-2-ONE
22		32000	UNKNOWN
47		86000	UNKNOWN
152		2300	UNKNOWN
158	107415	1100	2-METHYL-2,4-PENTANEDIOL
252	50598500	1700	3,5,5-TRIMETHYL-2(5H)-FURANONE
267		1300	UNKNOWN
274		1100	UNKNOWN
323		1200	UNKNOWN
348		2100	UNKNOWN
367		700	UNKNOWN
404		26000	UNKNOWN
445		6000	UNKNOWN
452		1500	UNKNOWN
467		3000	UNKNOWN
504		1200	UNKNOWN
543		1500	UNKNOWN
596		880	UNKNOWN
833		940	UNKNOWN
1374	122623	3300	BIS(2-ETHYLHEXYL)DECANEDIOIC ACID

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-08	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	*	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	50	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	ND	20	UG/L
COPPER	ND	40	UG/L
NICKEL	ND	40	UG/L
LEAD	133	60	UG/L
ZINC	72	10	UG/L
ALUMINUM	203	200	UG/L
BARIUM	ND	20	UG/L
COBALT	ND	40	UG/L
IRON	440000	50	UG/L
MANGANESE	5820	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	ND	120	UG/L
SODIUM	5560	1000	UG/L
POTASSIUM	ND	2000	UG/L
CALCIUM	1800	300	UG/L
MAGNESIUM	ND	300	UG/L

* : UNABLE TO ANALYZE DUE TO STRONG INTERFERENCE

ND: NOT DETECTED

1,5

Date: 10/13/88

Appendix 9

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number:	8TFAKC46	Date Recvd:	09/02/88	Date Collected:	09/01/88
Sample Number:	9	Time Recvd:	08:47	Time Collected:	11:35

Source: Jensen St. Drum Site
Site Description: Drum # 104 Sta # 8 (dup)
Sample Type: WATER
Sample Retention:

Tag Number:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

Attachment 9

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: BTFAKC46-09 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER ANALYST: MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L		COMPOUND	ug/L
Phenol	nd	dl= 600	Acenaphthene	nd dl= 300
bis(2-Chloroethyl) Ether	nd	dl= 300	2,4-Dinitrophenol	nd dl=4500
2-Chlorophenol	nd	dl= 600	4-Nitrophenol	nd dl=1200
1,3-Dichlorobenzene	nd	dl= 300	Dibenzofuran	nd dl= 300
1,4-Dichlorobenzene	nd	dl= 300	2,4-Dinitrotoluene	nd dl= 900
Benzyl Alcohol	nd	dl= 600	2,6-Dinitrotoluene	nd dl= 900
1,2-Dichlorobenzene	nd	dl= 300	Diethylphthalate	nd dl= 300
2-Methylphenol	nd	dl= 900	4-Chlorophenylphenyl Ether	nd dl=1200
bis(2-chloroisopropyl)Ether	nd	dl= 300	Fluorene	nd dl= 300
4-Methylphenol	nd	dl= 900	4-Nitroaniline	nd dl=1200
N-Nitroso-Di-n-Propylamine	nd	dl= 900	4,6-Dinitro-2-Methylphenol	nd dl=3000
Hexachloroethane	nd	dl= 300	N-Nitrosodiphenylamine	nd dl= 600
Nitrobenzene	nd	dl= 300	4-Bromophenylphenyl Ether	nd dl=1200
Isophorone	1290		Hexachlorobenzene	nd dl= 300
2-Nitrophenol	nd	dl=1500	Pentachlorophenol	nd dl=2250
2,4-Dimethylphenol	nd	dl= 900	Phenanthrene	nd dl= 300
Benzoic Acid	nd	dl=1500	Anthracene	nd dl= 300
bis(2-Chloroethoxy)Methane	nd	dl= 300	Di-n-Butylphthalate	nd dl= 300
2,4-Dichlorophenol	nd	dl= 900	Fluoranthene	nd dl= 300
1,2,4-trichlorobenzene	nd	dl= 300	Benzidine	nd dl=3000
Naphthalene	nd	dl= 300	Pyrene	nd dl= 300
4-Chloroaniline	nd	dl= 600	Butylbenzylphthalate	nd dl= 600
Hexachlorobutadiene	nd	dl= 300	3,3'-Dichlorobenzidine	nd dl=1500
4-Chloro-3-Methylphenol	nd	dl=1200	Benzo(a)Anthracene	nd dl=1200
2-Methylnaphthalene	nd	dl= 300	bis-(2-Ethylhexyl)Phthalate	nd dl= 600
Hexachlorocyclopentadiene	nd	dl=1500	Chrysene	nd dl=1200
2,4,6-Trichlorophenol	nd	dl= 900	Di-n-Octyl Phthalate	nd dl= 600
2,4,5-Trichlorophenol	nd	dl= 900	Benzo(b)Fluoranthene	nd dl=1200
2-Chloronaphthalene	nd	dl= 300	Benzo(k)Fluoranthene	nd dl=1200
2-Nitroaniline	nd	dl=1200	Benzo(a)Pyrene	nd dl=1200
DimethylPhthalate	nd	dl= 300	Indeno(1,2,3-cd) Pyrene	nd dl=1200
Acenaphthylene	nd	dl= 300	Dibenzo(a,h)Anthracene	nd dl=1200
3-Nitroaniline	nd	dl=1200	Benzo(g,h,i)Perylene	nd dl=1200

Attachment 9

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-09 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST. CONC (ug/l)	COMPOUND NAME
12		73000	UNKNOWN
39		94000	UNKNOWN
145		3100	UNKNOWN
251	50598500	1500	3,5,5-TRIMETHYL-2(5H)-FURANONE
268		1300	UNKNOWN
276		1100	UNKNOWN
324		1200	UNKNOWN
352		540	UNKNOWN
367		1300	UNKNOWN
408		6000	UNKNOWN
450		1100	UNKNOWN
471		670	UNKNOWN
509		250	UNKNOWN
548		360	UNKNOWN
1378	122623	610	BIS(2-ETHYLHEXYL)ESTER DECANEDIOIC ACID

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-09	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	*	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	67	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	ND	20	UG/L
COPPER	ND	40	UG/L
NICKEL	ND	40	UG/L
LEAD	129	60	UG/L
ZINC	144	10	UG/L
ALUMINUM	279	200	UG/L
BARIUM	ND	20	UG/L
COBALT	ND	40	UG/L
IRON	494000	50	UG/L
MANGANESE	6000	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	ND	120	UG/L
SODIUM	6060	1000	UG/L
POTASSIUM	ND	2000	UG/L
CALCIUM	3320	300	UG/L
MAGNESIUM	ND	300	UG/L

* : UNABLE TO ANALYZE DUE TO STRONG INTERFERENCE

ND: NOT DETECTED

Date: 10/13/88

Appendix 10

US ENVIRONMENTAL PROTECTION AGENCY
ENVIRONMENTAL SERVICE DIVISION
HOUSTON LABORATORY SECTION

LAB SAMPLE REPORT

Activity Number: 8TFAKC46 Date Recvd: 09/02/88 Date Collected: 09/01/88
Sample Number: 10 Time Recvd: 08:47 Time Collected: 11:47

Source: Jensen St. Drum Site Tag Number:
Site Description: Polypropylene vat Sta # 9
Sample Type: WATER
Sample Retention:

Param- Organic: ABN
Metals: HSL
Inorganic:
Biology:

Due Date: 10/06/88
Date Projected: 10/06/88
Date Completed: / /
Comment:
Your Initials: RLR

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-10 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER ANALYST:MARVELYN HUMPHREY

HSL ACID BASE/NEUTRAL COMPOUNDS BY METHOD 625

COMPOUND	ug/L	COMPOUND	ug/L
Phenol	nd dl=20	Acenaphthene	nd dl= 10
bis(2-Chloroethyl) Ether	nd dl=10	2,4-Dinitrophenol	nd dl=150
2-Chlorophenol	nd dl=20	4-Nitrophenol	nd dl= 20
1,3-Dichlorobenzene	nd dl=10	Dibenzofuran	nd dl= 10
1,4-Dichlorobenzene	nd dl=10	2,4-Dinitrotoluene	nd dl= 30
Benzyl Alcohol	nd dl=20	2,6-Dinitrotoluene	nd dl= 30
1,2-Dichlorobenzene	nd dl=10	Diethylphthalate	nd dl= 10
2-Methylphenol	nd dl=30	4-Chlorophenylphenyl Ether	nd dl= 40
bis(2-chloroisopropyl)Ether	nd dl=10	Fluorene	nd dl= 10
4-Methylphenol	nd dl=30	4-Nitroaniline	nd dl= 40
N-Nitroso-Di-n-Propylamine	nd dl=30	4,6-Dinitro-2-Methylphenol	nd dl=100
Hexachloroethane	nd dl=10	N-Nitrosodiphenylamine	nd dl= 20
Nitrobenzene	nd dl=10	4-Bromophenylphenyl Ether	nd dl= 40
Isophorone	nd dl=20	Hexachlorobenzene	nd dl= 10
2-Nitrophenol	nd dl=50	Pentachlorophenol	nd dl= 75
2,4-Dimethylphenol	nd dl=30	Phenanthrene	nd dl= 10
Benzoic Acid	nd dl=50	Anthracene	nd dl= 10
bis(2-Chloroethoxy)Methane	nd dl=10	Di-n-Butylphthalate	nd dl= 10
2,4-Dichlorophenol	nd dl=30	Fluoranthene	nd dl= 10
1,2,4-trichlorobenzene	nd dl=10	Benzidine	nd dl=100
Naphthalene	nd dl=10	Pyrene	nd dl= 10
4-Chloroaniline	nd dl=20	Butylbenzylphthalate	nd dl= 20
Hexachlorobutadiene	nd dl=10	3,3'-Dichlorobenzidine	nd dl= 50
4-Chloro-3-Methylphenol	nd dl=40	Benzo(a)Anthracene	nd dl= 40
2-Methylnaphthalene	nd dl=10	bis-(2-Ethylhexyl)Phthalate	nd dl= 20
Hexachlorocyclopentadiene	nd dl=50	Chrysene	nd dl= 40
2,4,6-Trichlorophenol	nd dl=30	Di-n-Octyl Phthalate	nd dl= 20
2,4,5-Trichlorophenol	nd dl=30	Benzo(b)Fluoranthene	nd dl= 40
2-Chloronaphthalene	nd dl=10	Benzo(k)Fluoranthene	nd dl= 40
2-Nitroaniline	nd dl=40	Benzo(a)Pyrene	nd dl= 40
DimethylPhthalate	nd dl=10	Indeno(1,2,3-cd) Pyrene	nd dl= 40
Acenaphthylene	nd dl=10	Dibenzo(a,h)Anthracene	nd dl= 40
3-Nitroaniline	nd dl=40	Benzo(g,h,i)Perylene	nd dl= 40

Attachment 10

ORGANIC ANALYSIS DATA

6ES-HL SAMPLE NO.: 8TFAKC46-10 DATE REPORTED: 9/30/88

SAMPLE TYPE: WATER

ANALYST: MARVELYN HUMPHREY

TENTATIVE COMPOUNDS BY METHODS 625

SCAN#	CAS #	EST. CONC (ug/l)	COMPOUND NAME
107	111762	200	2-BUTOXY-ETHANOL

* ANALYSTS NOTE ! - THE COMPOUNDS LISTED ARE TENATIVELY IDENTIFIED BY THE BEST MATCH WITH THE NIH/EPA/WILEY MASS SPECTRAL DATA BASE OR BY MANUAL MASS SPECTRA INTERPRETATION. STANDARDS WERE NOT AVAILABLE FOR CONFIRMATION OR QUANTITATION.
** Estimated concentration is based on a RF of 1.0 to internal standard !

US EPA HOUSTON BRANCH

SAMPLE #:	8TFAKC46-10	DATE	
SOURCE:	JENSEN STREET DRUM	RECEIVED:	01-Sep-88
TYPE:	AQUEOUS	DATE	
ANALYSTS:	CLARK,FELDMAN	REPORTED:	12-Oct-88

PARAMETER	CONCENTRATION	DETECTION LIMIT <=	UNITS
ARSENIC	ND	92	UG/L
SELENIUM	ND	96	UG/L
THALLIUM	ND	30	UG/L
MERCURY	*	0.2	UG/L
SILVER	ND	20	UG/L
BERYLLIUM	ND	10	UG/L
CADMIUM	ND	10	UG/L
CHROMIUM	39	20	UG/L
COPPER	162	40	UG/L
NICKEL	ND	40	UG/L
LEAD	ND	60	UG/L
ZINC	177	10	UG/L
ALUMINUM	2480	200	UG/L
BARIUM	153	20	UG/L
COBALT	ND	40	UG/L
IRON	1050	50	UG/L
MANGANESE	46	10	UG/L
VANADIUM	ND	60	UG/L
ANTIMONY	ND	120	UG/L
SODIUM	3140000	1000	UG/L
POTASSIUM	16600000	2000	UG/L
CALCIUM	24000	300	UG/L
MAGNESIUM	1940	300	UG/L

* : UNABLE TO ANALYZE DUE TO STRONG INTERFERENCE

ND: NOT DETECTED

H431158

GF# 114874 SW/EL

013-90-0035

05/03/87 00132087 H431158 $ 7.00

H00035

THE STATE OF TEXAS)

COUNTY OF HARRIS) WARRANTY DEED WITH VENDOR'S LIEN

That TEXAS BANK & TRUST COMPANY OF HOUSTON, a State Banking Institution, of the County of Harris and State of Texas, for and in consideration of the sum of Ten and No/100 Dollars ($10.00) and other valuable consideration to the undersigned paid by the Grantee herein named, the receipt of which is hereby acknowledged, and the further consideration of the execution and delivery by Grantee of that one certain real estate lien note of even date herewith, in the principal sum of SIXTY SIX THOUSAND AND NO/100 DOLLARS ($66,000.00) payable to TEXAS BANK & TRUST COMPANY OF HOUSTON, of Harris County, Texas by terms and bearing interest as therein provided, containing the usual clauses providing for acceleration of maturity and for attorney's fees, the payment of which note is secured by the vendor's lien herein retained, and as additionally secured by a Deed of Trust of even date herewith to John L. Gardner, Trustee, have GRANTED, SOLD AND CONVEYED, AND BY THESE PRESENTS DO GRANT, SELL AND CONVEY unto LEAS-IT, INC., of Harris County, Texas, all of the following described real property in Harris County, Texas, to-wit:

See Exhibit "A" attached hereto and incorporated herein for all intents and purposes.

TO HAVE AND TO HOLD the above described premises, together with all and singular the rights and appurtenances thereto in anywise belonging unto the said Grantee, its heirs and assigns forever; and we do hereby bind ourselves, our heirs, executors and administrators to WARRANT AND FOREVER DEFEND all and singular the said premises unto the said Grantee, its heirs and assigns, against every person whomsoever lawfully claiming or to claim the same or any part thereof.

FILED

MAY 3 9 30 AM '87

COUNTY CLERK
HARRIS COUNTY, TEXAS

013-90-0036

But it is expressly agreed that the VENDOR'S LIEN, as well as the Superior Title in and to the above described premises, is retained against the above described property, premises and improvements until the above described note and all interest thereon are fully paid according to the face, tenor, effect and reading thereof, when this Deed shall become absolute.

But it is expressly agreed and stipulated that the taxes for the current year have been prorated and are assumed by the Grantee. This conveyance is made and accepted subject to all and singular the reservations, restrictions, easements, rights-of-way, zoning ordinances, maintenance charges, oil, gas and mineral reservations, royalties, and covenants, if any applicable to and enforceable against the above described property as reflected by the records of the County Clerk of Harris County, Texas.

EXECUTED this 28th day of April, 1982.

William R. Glass
Executive Vice President

STATE OF TEXAS)
COUNTY OF Harris)

Before me the undersigned authority, on this day personally appeared WILLIAM R. GLASS, Executive Vice President of TEXAS BANK & TRUST COMPANY OF HOUSTON, a State Banking Institution, known to me to be the person whose name is subscribed to the foregoing instrument, and acknowledged to me that he executed the same for the purposes and consideration therein expressed.

Given under my hand and seal of office this 28th day of April, 1982.

Notary Public in and for
Harris County, Texas

E. LEE
Notary Public for the State of Texas
My Commission Expires 4-5-84

Grantee's Address:

3116 Jensen Drive
Houston, Texas 77026

RETURN TO:

USLIFE TITLE COMPANY OF HOUSTON
6300 BAYOU, SUITE 120
HOUSTON, TEXAS 77036

-2-

013-90-0037

EXHIBIT A

A tract or parcel of land containing 63,815.64 SQ. FT. or 1.46501 acre being known as Lot 9 and the North 1/2 of Lot 8 save the west 9 FT. Conveyed to the City of Houston of a subdivision of the MOFFATT TRACT and the North 208.00 FT. of the BRADY 4.08 acre tract in the City of Houston out of the Samuel M.Harris Survey, Abstract 327 Harris County, Texas. said MOFFATT SUBDIVISION delineated on plat recorded in Vol.998, Page 716 of the Harris County Deed Records said so-called 4.08 acre tract conveyed to Mary M. Brady by A.W. Schuller, et al, in instrument recorded in Vol.36, Page 580 of the Harris County Deed Records, said 1.46501 acre tract being more particularly described by metes and bounds as follows, To-Wit:

BEGINNING at a 1/2 inch iron pipe at the Northwest corner of the herein described 1.46501 acre tract marking the intersection of the East right-of-way line of Jensen Drive (60.00 ft. in width) with the North line of said Lot 9 of the subdivision of the Moffatt Tract, said iron pipe being located South a distance of 101.00 ft. from the intersection of the South right-of-way line of Evella Street (50.00 ft. in width) with the East right-of-way of said Jensen Dr.;

THENCE North 89 deg. 41 min. 24 sec. East partially with an old fence line passing a 1/2 inch iron rod at the Northeast corner of said Lot 9 at 147.96 ft in all a total distance of 355.96 ft. to a 1/2 inch iron pipe at the Northeast corner at a fence corner.

THENCE South with the East line of said Brady so-called 4.08 acre tract a distance of 208.00 ft. to a 1/2 inch iron pipe at a fence corner;

THENCE South 89 deg. 41 min. 24 sec. West partially with a wood fence a distance of 208.00 ft. to a 1/2 inch iron rod at a fence corner and marking the lower Southwest corner of the herein described tract;

THENCE North with the West line of said Brady so-called 4.08 acre tract a distance of 69.10 ft. to a 1/2 inch iron rod at a re-entrant corner marking the Southeast corner of the North 1/2 of said Lot 8;

THENCE South 89 deg. 41 min. 24 sec. West with the mid line of said Lot 8 a distance of 147.96 ft. to a 3/8 inch iron rod at a fence corner marking the upper Southwest corner of the herein described tract and being in the East right-of-way line of Jensen Dr.;

THENCE North with the East right-of-way line of said Jensen Dr. a distance of 138.90 ft. to the PLACE OF BEGINNING and containing 1.46501 acre.

STATE OF TEXAS
COUNTY OF HARRIS

I hereby certify that this instrument was FILED in File Number Sequence on the date and at the time stamped hereon by me; and was duly RECORDED, in the Official Public Records of Real Property of Harris County, Texas on

MAY 3 - 1982

COUNTY CLERK,
HARRIS COUNTY, TEXAS

4/16/82

1A. Cost Center: TS1312	TAT ZONE II CONTRACT CONTRACT NO. 68-01-7368 TECHNICAL DIRECTION DOCUMENT (TDD) ECOLOGY AND ENVIRONMENT, INC.	2. No.: T06-8810-29 TXD987966900 Amendment _____
1B. Account No.: TTX 0829 SAB		

3A. Priority	4A. Estimate of Total Hours: (b) (4)	5A. EPA Site Name: Jensen Drums	7. Completion Date: 11/30/88
[X] High [ ] Medium [ ] Low	Total Costs: $4000	5B. SSID No.: K9 / 5C. City/County/State: Houston/Harris/TX	8. Reference Info: [ ] Yes [ ] Attached [X] No [ ] Pick-up
3B. Key EPA Contact: Name: Hammack Phone: 655-2270	4B. Overtime Approved: [X] Yes [ ] No	6. Source of Funds: [ ] Other _____ [X] CERCLA [ ] 311 [ ] UST	8A. Subtask Code:

9. Type of Activity:

CWA-311	CERCLA	AS SPECIFIED ABOVE	
[ ] SPCC	[X] Site Assessment	[ ] Special Project	[ ] Quality Assurance
[ ] On-Scene Monitoring	[ ] Removal Funded	[ ] Analytical Project	[ ] Training
[ ] Spill Clean-up Funded	[ ] Removal PRP (AO/CO)	[ ] TITLE III	[ ] Program Management
	[ ] On-Site Monitoring	[ ] UST	[ ] Technical Assistance
		[ ] FEMA	[ ] Information Management

10. General Task Description: Conduct site assessment and drum sampling at the Jensen drum site.

11. Desired Report Form:
[X] Formal Report
[ ] Letter Report
[ ] Formal Briefing
[ ] Other (Specify) _____

12. Specific Elements:
1. Conduct formal site assessment
2. Photodocument site
3. Conduct drum sampling
4. Coordinate with EPA lab

RE: T06-8808-09 ok6

13. Interim Deadlines:

14. Authorizing DPO: Barbara Biggs for JCP (Signature) — 15. Date: 10/5/88

16. Received by: [X] Accepted [ ] Accepted with Exceptions (Attached) [ ] Rejected — (TATL Signature) — 17. Date: 10/7/88

T007037

Distribution:

Sheet 1	White	DPO Copy
Sheet 2	Blue	TATL Copy
Sheet 3	Green	ZPM Copy
Sheet 4	Canary	PO Copy
Sheet 5	Pink	CO Copy
Sheet 6	Goldenrod	DPO Original (Unsigned by TATL)

J. McLaughlin MT

RECORD OF COMMUNICATION	(Record of Item Checked Below) _X_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: Pat Hammack, OSC Emergency Response Group, Region VI (214) 655-2270	From: Jairo Guevara, FIT Chemical Engineer	Date: 2/2/89 Time: 2:20 pm

SUBJECT: Additional Information for Jensen Drive Drum Site

SUMMARY OF COMMUNICATION

Called Pat Hammack to clarify and complete some information for Jensen Drive Drum site Preliminary Assessment.

Mr. Hammack stated:

1. The site is under remedial cleanup action. All the drums with contents had been sampled and placed in the site warehouse. The drums will be removed pending receipt of analyses from laboratories. The soil was also sampled and the contaminated soil will be removed.
2. No more history of the site is known. The site is presently known as May Cooperage, Inc., and it moved from a previous location at Davis site (another site being investigated by EPA). May Cooperage, Inc. moved to Jensen Drive in 1985-1986. He doesn't know what was in the Jensen Drive property before the May Cooperage operations.
3. There were more than 400 drums on-site. About 210 drums have some waste contents.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REF. 5

TEXAS WATER DEVELOPMENT BOARD

REPORT 190

ANALOG-MODEL STUDIES OF GROUND-WATER HYDROLOGY IN THE HOUSTON DISTRICT, TEXAS

By

Donald G. Jorgensen
U.S. Geological Survey

This report was prepared by the U.S. Geological Survey
under cooperative agreement with the
Texas Water Development Board
and the City of Houston

February 1975

Second Printing
August 1975

ANALOG-MODEL STUDIES OF GROUND-WATER HYDROLOGY IN THE HOUSTON DISTRICT, TEXAS

INTRODUCTION

Purpose and Scope of the Project

Continual declines of water levels in wells, land-surface subsidence, and salt-water encroachment are problems related to ground-water pumping in the Houston district that necessitate additional studies of the hydrologic system.

This study was begun in 1970 by the U.S. Geological Survey in cooperation with the city of Houston and the Texas Water Development Board. The principal purpose was to develop a means for forecasting declines in the altitudes of the potentiometric surfaces (levels to which water will rise in tightly cased wells) under various conditions of pumping. Because of the complexity of the hydrologic system, an electric analog model was chosen as the most suitable device for analyzing the system and simulating future responses.

This report presents the results of the geologic and hydrologic studies, discusses the theory and construction of the analog model, and presents the simulation of the declines in the altitudes of the potentiometric surfaces as determined by using the model.

Most of the data upon which this report is based are available in reports by the U.S. Geological Survey and the Texas Water Development Board (see references) or in the files of the U.S. Geological Survey in Houston. Data are obtained through a continuing cooperative program of the U.S. Geological Survey, the Texas Water Development Board, the city of Houston, and the city of Galveston.

For those readers interested in using the metric system, metric equivalents of English units of measurements are given in parentheses. The English units used in this report may be converted to metric units by the following conversion factors:

From		Mutiply by	To obtain	
Unit	Abbreviation		Unit	Abbreviation
cubic foot	ft^3	0.028317	cubic meter	m^3
foot	ft	0.3048	meter	m
foot per day	ft/day	0.3048	meter per day	m/day
foot squared per day	ft^2/day	0.0929	meter squared per day	m^2/day
inch	in	2.540	centimeter	cm
million gallons	10^6 gal	3,785	cubic meters	m^3
square mile	mi^2	2.590	square kilometer	km^2

Description of the Area

The Houston district, as used in this report, consists of all of Harris, Waller, and Fort Bend Counties and parts of Galveston, Montgomery, Brazoria, Chambers, and Liberty Counties (Figure 1). The area of the district is approximately 6,600 square miles (17,100 square kilometers).

Figure 1.—Location and Extent of the Houston District

Except for a small area in Montgomery and Waller Counties, the land surface is nearly flat and featureless;

the only significant relief is in the valleys of the streams. The land is generally treeless in the rural areas from Houston southeast to Galveston.

The climate of the Houston district is characterized by mild winters and hot summers. The lowest temperature recorded at Houston was 15°F (-9.5°C) and the maximum temperature was 108°F (42°C). The mean annual temperature is 69.2°F (20.6°C). The 30-year average (1931-60) rainfall at Houston was 45.95 inches (116.7 centimeters); monthly rainfall is distributed uniformly throughout the year.

The Houston district has a large and diversified industrial economy, but also has extensive agricultural developments. Large amounts of water are used by industry for processing and cooling purposes and by rice and cotton growers for irrigation. The rapid growth and development of the district are due in part to the availability of large amounts of inexpensive ground-water supplies. The locations of the major pumping areas are shown on Figure 2.

Previous Studies

Among the more comprehensive earlier reports describing the geology and hydrology of the Houston district is the report by Lang and others (1950). Pettit and Winslow (1957) summarized the geology and ground-water resources of Galveston County. The relation of salt water to fresh ground water in Harris County was discussed by Winslow and others (1957). Land-surface subsidence and its relation to the withdrawal of ground water in the Houston-Galveston area was first reported by Winslow and Doyel (1954) and later by Gabrysch (1969).

Previous ground-water investigations were made in Waller County (Wilson, 1967); Liberty County (Anders and others, 1968); Montgomery County (Popkin, 1971); Fort Bend County (Wesselman, 1972); Brazoria County (Sandeen and Wesselman, 1973); and Chambers County (Wesselman, 1971). These studies provided relatively recent data on the ground-water resources and ground-water development in most of the Houston district exclusive of Harris and Galveston Counties.

A report containing data on ground-water withdrawals and water-level declines in Galveston and Harris Counties was prepared by Gabrysch (1972), and the role of groundwater in the development of the water system for the city of Houston was described in reports by Turner, Collie and Braden, Inc. (1966, 1972).

A report by Wood and Gabrysch (1965) describes the results of the first analog-model study of ground-water hydrology in the Houston district. The usefulness of the first analog model was limited because the simulations required that the aquifers be operated independently of each other and because the results of pumping in the western part of the area could not be simulated. Evaluation of the performance of the first model indicated that improvement in aquifer designation was needed and that the transmissivity of the aquifers and vertical leakage between the aquifers were not adequately modeled.

Acknowledgments

The author expresses his appreciation to Mr. D. E. VanBuskirk of the city of Houston Water Department and to the well owners and drillers who supplied pertinent information for this study. The aquifers in the district were mapped by John Wesselman, U.S. Geological Survey, and the model was designed and constructed by William Bruns, U.S. Geological Survey.

GEOHYDROLOGY

The geologic formations from which most of the ground water is pumped in the Houston district are composed of sedimentary deposits of gravel, sand, silt, and clay. The formations, from oldest to youngest, that form important hydrologic units are: The Catahoula Sandstone and Fleming Formation of Miocene age; the Goliad Sand of Pliocene age; the Willis Sand, Bentley and Montgomery Formations, and Beaumont Clay of Pleistocene age; and alluvium of Quaternary age (Table 1). Correlation of the hydrologic units from northern Montgomery County to the Gulf of Mexico is shown by the chart on Figure 3.

With exception of the alluvium and the Goliad Sand, the formations crop out in belts that are nearly parallel to the shoreline of the Gulf of Mexico. The younger formations crop out nearer the Gulf and the older ones farther inland. All the formations thicken downdip so that the older formations dip more steeply than the younger ones. Locally, however, the occurence of salt domes and faults may cause reversals of the regional dip and thickening or thinning of individual beds.

Salt domes are cylindrical structures resulting from the upward movement of salt masses that are probably of Mesozoic age. In some areas, the salt domes penetrate the uppermost aquifer and nearly reach the surface. In

Table 1.—Geologic and Hydrologic Units Used in This Report and In Recent Reports on Nearby Areas

This report				Wood and Gabrysch (1965)	Sandeen and Wesselman (1969)	Wilson (1967)	Popkin (1971)	Lang, Winslow, and White (1950)	Pettit and Winslow (1957)	Wesselman (1971)	Anders and others (1968)	Wesselman (1972)
System	Series	Stratigraphic unit	Aquifer	Houston district	Brazoria County	Austin and Waller Counties	Montgomery County	Houston district	Galveston County	Chambers and Jefferson Counties	Liberty County	Fort Bend County
Quaternary	Holocene	Quaternary alluvium		Confining layer and Alta Loma Sand of Rose (1943)		Alluvium of the Brazos River		Alluvial deposits	Beach and dune sand			
	Pleistocene	Beaumont Clay	Chicot aquifer, Upper unit		Chicot aquifer, Upper unit	Evangeline aquifer (May contain unidentifiable parts of basal Chicot aquifer along the edges of Brazos River flood plain or along southern part of both counties)	Chicot aquifer	Beaumont Clay	Beaumont Clay	Chicot, Upper unit	Chicot	Chicot, Upper unit
		Montgomery Formation						"Alta Loma Sand"	"Alta Loma Sand"			
		Bentley Formation	Chicot aquifer, Lower unit		Chicot aquifer, Lower unit					Aquifer, Lower unit	Aquifer	Aquifer, Lower unit
		Willis Sand						Zone 7	Lissie Formation			
								Zone 6				
Tertiary	Pliocene	Goliad Sand	Evangeline aquifer	Heavily pumped layer	Evangeline aquifer		Evangeline aquifer	Zone 5		Evangeline aquifer	Evangeline aquifer	Evangeline aquifer
	Miocene	Fleming Formation	Burkeville confining layer	Zone 2		Burkeville aquiclude	Burkeville aquiclude			Burkeville aquiclude	Burkeville aquiclude	Burkeville aquiclude
			Jasper aquifer, Upper unit			Jasper aquifer	Jasper aquifer, Upper part of Jasper	Zone 4		Jasper aquifer	Jasper aquifer	Jasper aquifer
								Zone 3				
			Jasper aquifer, Lower unit				Jasper aquifer, Lower part of Jasper	Zone 2				
								Zone 1				

most instances, however, the domes pierce only the lower aquifers. Ground-water circulation within the vicinity of the domes may result in salt water contamination.

Faults in the area may have several hundred feet of displacement in the older Tertiary formations, but displacement tends to decrease upward so that the faulting may not be apparent at the surface; generally, the geologic units containing fresh water are not displaced enough to disrupt hydraulic continuity.

Description of the Water-Bearing Units

Chicot Aquifer

The Chicot aquifer is composed of the Willis Sand, Bentley Formation, Montgomery Formation, Beaumont Clay, and Quaternary alluvium (Table 1). The Chicot includes all deposits from the land surface to the top of the Evangeline aquifer (Figure 4).

The basis for separating the Chicot aquifer from the underlying Evangeline aquifer is primarily a difference in hydraulic conductivity, which in part causes the difference in the altitudes of the potentiometric surfaces in the two aquifers.

In most of the Houston district, the Chicot aquifer consists of discontinuous layers of sand and clay of about equal total thickness, and in some parts of the district, the aquifer can be separated into an upper and lower unit. Throughout most of Galveston County and southeast Harris County, the basal part of the lower Chicot aquifer is formed by a massive sand section with high hydraulic conductivity. (See Figure 4.) This sand unit, which is heavily pumped, is known locally as the Alta Loma Sand. In many previous reports, the unit is identified as the Alta Loma Sand of Rose (1943). The term Alta Loma Sand is not often used in this report because the stratigraphic relationships are not clear.

If the upper unit of the Chicot aquifer cannot be defined in a particular area, the aquifer is said to be undifferentiated. The areal extent of the upper unit roughly corresponds to the areal extent of the Beaumont Clay. The areas in which the aquifer cannot be differentiated into units are mostly in the northern part of the district (Figure 5).

Wells that are completed in the uppermost sand layers of the Chicot aquifer and that have water levels that are distinctly higher than water levels in wells completed in the underlying sand layers are considered to produce water from the upper unit.

The transmissivity of the Chicot aquifer ranges from zero to about 20,000 ft^2/day (feet squared per day) or 1,858 m^2/day (meters squared per day). The storage coefficient ranges from 0.0004 to 0.20 (Figure 6). The larger values of the storage coefficient occurs in the northern part of the district where the aquifer is partly or totally under water-table conditions.

Evangeline Aquifer

The Evangeline aquifer, which is the most important source of fresh ground water in the Houston metropolitan area, consists of layers of sand and clay that are present throughout the district except where the unit is pierced by salt domes (Figure 7). The aquifer is underlain by the Burkeville confining layer.

The transmissivity of the Evangeline aquifer ranges from less than 5,000 ft^2/day (460 m^2/day) to about 15,000 ft^2/day (1,400 m^2/day). (See Figure 8.) In general, the horizontal hydraulic conductivity of the Evangeline aquifer is less than the horizontal hydraulic conductivity of the Chicot aquifer, but because the Evangeline is generally thicker than the Chicot, it is generally more transmissive.

The storage coefficient of the Evangeline ranges from about 0.0005 to 0.0002 where it occurs under artesian conditions; in the outcrop area, where the aquifer is under water-table conditions, the storage coefficient ranges from greater than 0.002 to 0.20.

Burkeville Confining Layer

The Burkeville confining layer, which in the outcrop area is in the upper part of the Fleming Formation of Tertiary age, is composed mostly of clay but contains some layers of sand. The Burkeville restricts the flow of water except where it is pierced by salt domes and in the northeastern part of the district where it contains many water-yielding sand layers. The Burkeville is underlain by the Jasper aquifer.

Declines in the Altitudes of the Potentiometric Surfaces

Records of ground-water withdrawals in the Houston district date back to 1887, and records exist for probably 90 percent of the total withdrawals.

Use of ground water increased slowly until about 1937, when rapid industrialization increased the rate of use. In 1955, surface water from the San Jacinto River (Lake Houston) became available, and the use of ground water remained relatively constant until 1962. From 1962 to 1970, the use of ground water increased to about 575 mgd (million gallons per day) or 2.2 million m^3/day (cubic meters per day). The historic withdrawals of ground water for 1890-1970 and the predicted withdrawals for 1971-80 are shown on Figure 9.

The pumping of large quantities of ground water has caused large declines in the altitudes of the potentiometric surfaces in the aquifers, except in the upper unit of the Chicot. The declines from 1890 to 1953, from 1890 to 1960, and from 1890 to 1970 in the lower unit of the Chicot aquifer and in the Chicot aquifer undifferentiated are shown on Figures 10, 11, and 12. Figures 13, 14, and 15 show the decline of the altitude of the potentiometric surface in the Evangeline aquifer for the same periods.

By 1970, the altitude of the potentiometric surface had declined a maximum of about 330 feet (100 meters) in the lower unit of the Chicot aquifer and Chicot aquifer undifferentiated and about 430 feet (130 meters) in the Evangeline aquifer.

Not enough data are available to map the decline of the altitude of the potentiometric surface in the upper unit of the Chicot aquifer.

Houston Area

Nearly all the ground water pumped in the Houston area (Figure 2) is from wells screened in the Evangeline or Chicot aquifers, and many of the wells are screened in both aquifers. (The reader should note that the Houston area is only a part of the Houston district.) The declines of water levels in wells screened in each of the aquifers are shown on Figure 16. Locations of the wells are shown on Figure 2.

Declines in the Evangeline aquifer and the lower unit of the Chicot aquifer have been the greatest. The upper unit of the Chicot is relatively undeveloped; therefore, the decline of water levels shown on Figure 16 for the upper unit of the Chicot is due in part to the discharge of water to the lower unit.

Pasadena Area

The Pasadena area is an industrialized area east of the Houston area and mostly west of the San Jacinto River (Figure 2). Most of the ground water pumped in this area is from the Evangeline aquifer, but a considerable amount is withdrawn from the lower unit of the Chicot in the southeastern part of the area. A small and mostly unrecorded amount is pumped from the upper unit of the Chicot.

Figure 17 shows the decline of water levels in three wells, each of which is screened in a different water-bearing unit. The decline of the altitude of the potentiometric surface in the upper unit of the Chicot is not as great as the decline in either the Evangeline or the lower unit of the Chicot. The decline in the upper unit of the Chicot is attributed to discharge to the lower unit and to a small amount of pumping.

Katy Area

The Katy area is an agricultural area west of the Houston area and includes the northern and western parts of Harris County, about half of Waller County, and northern Fort Bend County (Figure 2).

Ground water is used exclusively in the Katy area and most of it is used for rice irrigation. Most of the water pumped is from the lower unit of the Chicot aquifer, the Chicot aquifer undifferentiated, and the Evangeline aquifer. In the northern part of Fort Bend County, along the Brazos River, some water is pumped from the alluvium, which is a part of the upper unit of the Chicot aquifer.

Figure 18 shows the water-level declines in well LJ-65-04-507, completed in the Chicot aquifer undifferentiated and in well LJ-65-04-607, completed in the Evangeline aquifer. Declines are greater in wells screened in the Evangeline aquifer than in wells screened in the Chicot aquifer undifferentiated.

Baytown-LaPorte Area

The Baytown-LaPorte area extends eastward from the Pasadena area to the Chambers County line (Figure 2). It is primarily an industrial area, in which most of the ground water used is pumped from the lower unit of the Chicot aquifer.

Figure 19 shows the water-level declines in well LJ-65-24-606, screened in the Evangeline aquifer and in well LJ-65-24-501, screened in the lower unit of the Chicot aquifer. Although most withdrawals in the area are from the lower unit of the Chicot, the rate of decline in the Evangeline is nearly as large as the decline in the lower unit of the Chicot.

a result of pumping. The northern part of the district also has the highest vertical leakage, which allows water to move easily from the surface to the Chicot aquifer.

Limitations on Use of the Analog Model

The values of the parameters modeled are rational values for the hydrologic system. Further investigation and new data will allow refinements to be made and will allow more accurate determination of the values for the parameters modeled.

The model was not designed to simulate the effects of one well over a short period of time. The model was designed to simulate the effects of withdrawal of water from a well field for periods of a year or longer.

The model was not designed to predict subsidence accurately; although, the simulation of clay compaction was included. Declines in the altitudes of the potentiometric surfaces are simulated, and these values can be used in calculations to predict subsidence.

Caution should be used in applying the modeled values in equations to predict short-term specific capacity of an individual well. The model simulates leaky-aquifer conditions with clay storage for time intervals greater than 1 year.

Data Required for Improvement of the Model

Observation wells that are screened in only one water-bearing unit are needed for better calibration of the model. The areas where measurements from such observation wells are needed are determined easily by noting the areas in which no potentiometric measurements are shown on Figures 12 and 15.

The accuracy of the model could be improved by better delineation of the water-bearing sands above the basal sand (Alta Loma Sand of Rose, 1943) of the lower unit of the Chicot in the Texas City area. To improve the correlation of observed and measured declines in the altitude of the potentiometric surface in the Texas City area, it was necessary to program extra pumpage.

More data are needed on the quantity of ground water pumped for irrigation in the vicinity of Dayton and Liberty and on the quantity of water discharged from flowing and pumped wells prior to 1930 in Galveston County.

The model could be modified to simulate clay compaction more accurately if the storage coefficient for clay compaction is determined accurately for each aquifer. In the present model, the storage coefficient for clay compaction is modeled as existing entirely between the land surface and the centerline of the lower unit of the Chicot aquifer and the Chicot aquifer undifferentiated. To distribute the storage coefficient accurately, more data concerning the characteristics of these clay layers are needed. These data can be obtained from consolidation tests on core samples, records of clay compaction from compaction recorders, and possibly from studies of various types of geophysical logs.

The present model could be modified to be one of the elements of a hybrid analog-digital model that could be used for detailed studies of such problems as salt-water encroachment and land-surface subsidence.

SUMMARY

The Houston district has two major aquifers above the Burkeville confining layer. The uppermost aquifer is the Chicot aquifer, which consists of sand and clay layers that dip gently toward the Gulf of Mexico. In places in the Houston district, the Chicot aquifer can be separated into an upper and a lower unit.

The upper unit, which is not an important source of water for most of the district, can be defined where the altitude of the potentiometric surface differs from the altitude of the potentiometric surface in the lower unit. Where the upper unit cannot be defined, the aquifer is said to be undifferentiated.

The Evangeline aquifer, which is the major aquifer in the district, underlies the Chicot aquifer and consists of sand and clay layers that dip toward the Gulf of Mexico.

The Burkeville confining layer consists mostly of clay layers that form an effective barrier to ground-water flow at nearly all locations except at and near the outcrop of the Evangeline aquifer in Montgomery County.

The large cones of depression in the potentiometric surfaces in the lower unit of the Chicot aquifer, the Chicot aquifer undifferentiated, and the Evangeline aquifer are caused by large withdrawals of water. Water now flows toward the center of these cones, creating a reversal of the original hydraulic gradient in most areas south of Houston. This reversal of the hydraulic gradient has resulted in salt-water encroachment toward the centers of the cones, but

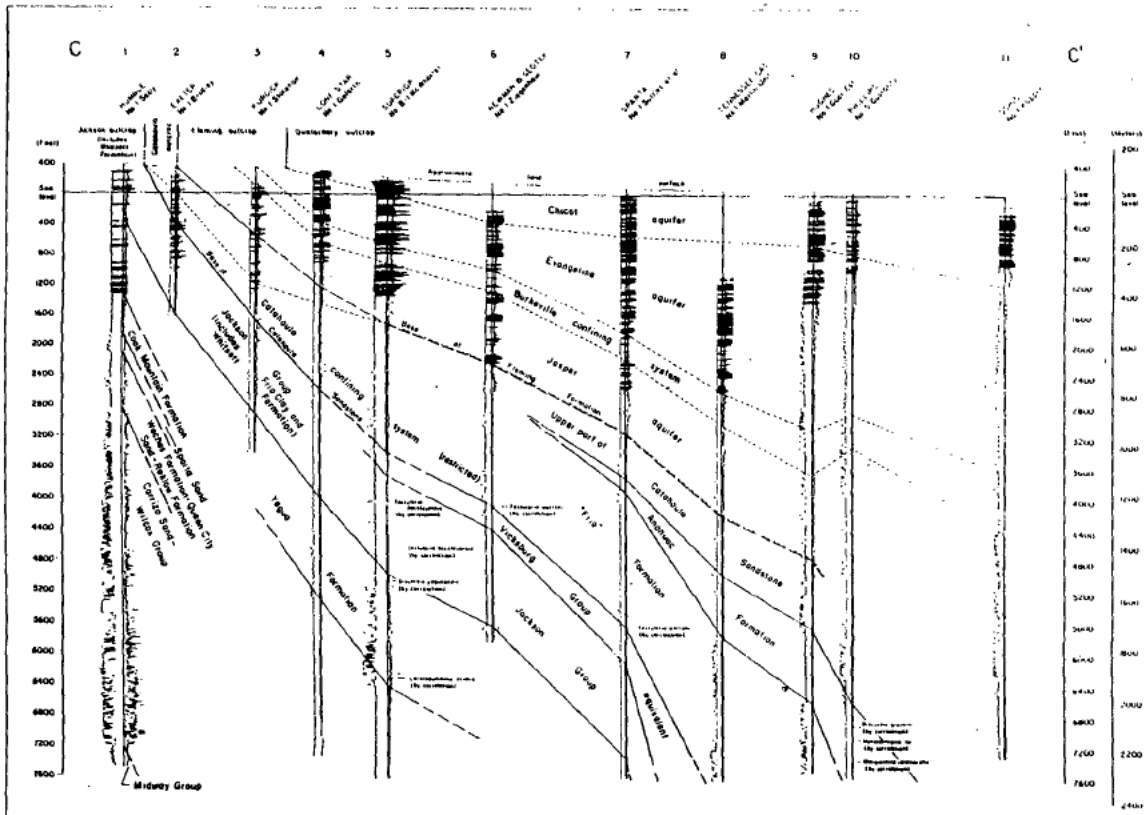


Figure 4
Stratigraphic and Hydrogeologic Section C C'

REF. 6

TEXAS DEPARTMENT OF WATER RESOURCES

REPORT 236

STRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK OF PART OF THE COASTAL PLAIN OF TEXAS

By

E. T. Baker, Jr.
United States Geological Survey

This report was prepared by the U.S. Geological Survey under cooperative agreement with the Texas Department of Water Resources.

July 1979

STRATIGRAPHIC AND HYDROGEOLOGIC FRAMEWORK OF PART OF THE COASTAL PLAIN OF TEXAS

INTRODUCTION

This report has been prepared to illustrate the stratigraphic and hydrogeologic framework of a part of the Coastal Plain of Texas from the Sabine River to the Rio Grande. It is the outgrowth of a project that has as its ultimate objective the construction of a digital ground-water flow model, if feasible or desirable, of at least a part of the Miocene aquifers in the Gulf Coastal Plain of Texas. The model would serve as a tool for planning the development of the ground-water supplies. Work on the project is being done by the U.S. Geological Survey in cooperation with the Texas Department of Water Resources.

During the course of delineating the Miocene aquifers, which is basic to the design and development of the model, the scope of the study was broadened to include delineations of other hydrogeologic units, as well as delineations of stratigraphic units. As a result, units ranging in age from Paleocene to Holocene were delineated (Table 1). A relationship of stratigraphic units to designated hydrogeologic units was thus established statewide.

Eleven dip sections and 1 strike section are included in this report. The dip sections are spaced about 50 miles (80 km) apart with the most easterly one being near the Sabine River and the most southerly one being near the Rio Grande. Each dip section is about 100 miles (161 km) long and extends from near the coastline to short distances inland from the outcrop of the oldest Miocene formation—the Catahoula Tuff or Sandstone. The strike section, which is about 500 miles (804 km) long (in three segments), extends from the Sabine River to the Rio Grande and joins the dip sections at common control points. This section is from 50-75 miles (80-121 km) inland from the Gulf of Mexico and is essentially parallel to the coastline. The location of the sections and the Catahoula outcrop are shown on Figure 1.

The sections extend from outcrops at the land surface to maximum depths of 7,600 feet (2,316 m) below sea level. Selected faunal occurrences, where known or inferred by correlation from nearby well logs, are included. The extent of sand that contains water having less than 3,000 mg/l (milligrams per liter) of dissolved solids was estimated from the electrical characteristics shown by the logs. This information is included on all of the sections.

Although faulting is common in the Coastal Plain and is complex in some areas, all faults have been omitted from the sections to maintain continuity of the stratigraphic and hydrogeologic boundaries. The disadvantage of such omission is, of course, the representation of an unrealistic and simplistic picture of unbroken strata with uninterrupted boundaries. In reality, many of the faults have not only broken the hydraulic continuity of the strata but more importantly have become barriers to fluid flow or conduits for cross-formational flow. The sections are presented in this report as Figures 2-15.

Acknowledgements

The author wishes to express his appreciation to C. W. Holcomb (Exxon Co., USA), C. B. Phillips (Mobil Oil Corp.), and G. C. Hardin, Jr. (Ashland Exploration Co.) of Houston, Texas; J. G. Klatt (Mobil Oil Corp.) and J. C. Wyeth (Continental Oil Co.) of Corpus Christi, Texas; H. C. Hixson (Mobil Oil Corp.) of Denver, Colorado; and D. C. Bebout (Bureau of Economic Geology, University of Texas at Austin), for discussing correlation problems. Their assistance does not necessarily constitute an endorsement of the views expressed by the author in this report. The assistance of V. E. Barnes (Bureau of Economic Geology, University of Texas at Austin), who provided unpublished geologic maps of South Texas areas; of R. H. Wallace, Jr., J. B. Wesselman, and R. E. Taylor (U.S. Geological Survey) of Bay St. Lewis, Mississippi; of P. H. Jones (Department of Geology, Louisiana State University), Baton Rouge, Louisiana, who provided log data, is also appreciated. D. G. Jorgensen (U.S. Geological Survey) of Lawrence, Kansas (formerly of Houston, Texas) and W. R. Meyer

Table 1.--Stratigraphic and Hydrogeologic Framework of Part of the Coastal Plain of Texas

Era	System	Series	Stratigraphic Units	Hydrogeologic Units	Selected Faunal Markers	Remarks
CENOZOIC	Quaternary	Holocene	Alluvium	Chicot aquifer		Quaternary System undifferentiated on sections.
		Pleistocene	Beaumont Clay Montgomery Formation Bentley Formation Willis Sand			
	Tertiary	Pliocene	Goliad Sand	Evangeline aquifer		Goliad Sand overlapped east of Lavaca County.
		Miocene	Fleming Formation	Burkeville confining system	*Paramides matsoni* *Bigenerina nodosaria* var. *directa* *Bigenerina humblei* *Amphistegina* sp.	
			Oakville Sandstone	Jasper aquifer		Oakville Sandstone included in Fleming Formation east of Washington County.
			Surface: Catahoula Tuff or Sandstone / Subsurface: Upper part of Catahoula Tuff or Sandstone	Catahoula confining system (restricted)	*Discorbis nomada* *Discorbis gravelli* *Heterostegina* sp. *Marginulina idiomorpha*	Catahoula Tuff designated as Catahoula Sandstone east of Lavaca County.
			Subsurface: Anahuac Formation		*Textularia mississippiensis*	Anahuac and "Frio" Formations may be Oligocene in age.
			Subsurface: "Frio" Formation		*Textularia warreni*	
		Oligocene(?)	Surface: Frio Clay / Subsurface: Vicksburg Group equivalent	Not discussed as hydrologic units in this report.		Frio Clay overlapped or not recognized on surface east of Live Oak County.
		Eocene	Jackson Group: Whitsett Formation: Fashing Clay Member			Indicated members of Whitsett Formation apply to south-central Texas. Whitsett Formation east of Karnes County may be, in part or in whole, Oligocene in age.
			Jackson Group: Whitsett Formation: Calliham Sandstone Member or Tordilla Sandstone Member		*Marginulina cocoaensis*	
			Jackson Group: Whitsett Formation: Dubose Member			
			Jackson Group: Whitsett Formation: Dewesville Sandstone Member		*Textularia hockleyensis* *Massilina pratti*	
			Jackson Group: Whitsett Formation: Conquista Clay Member			
			Jackson Group: Whitsett Formation: Dilworth Sandstone Member		*Textularia dibollensis*	
			Jackson Group: Manning Clay			
			Jackson Group: Wellborn Sandstone			
			Jackson Group: Caddell Formation		*Nonionella cockfieldensis* *Discorbis yeguaensis* *Eponides yeguaensis* *Cerotabulimina eximia*	
			Claiborne Group: Yegua Formation			
			Claiborne Group: Cook Mountain Formation			
			Claiborne Group: Sparta Sand			
			Claiborne Group: Weches Formation			
			Claiborne Group: Queen City Sand			
			Claiborne Group: Reklaw Formation			
			Claiborne Group: Carrizo Sand			
		Paleocene	Wilcox Group			
			Midway Group			

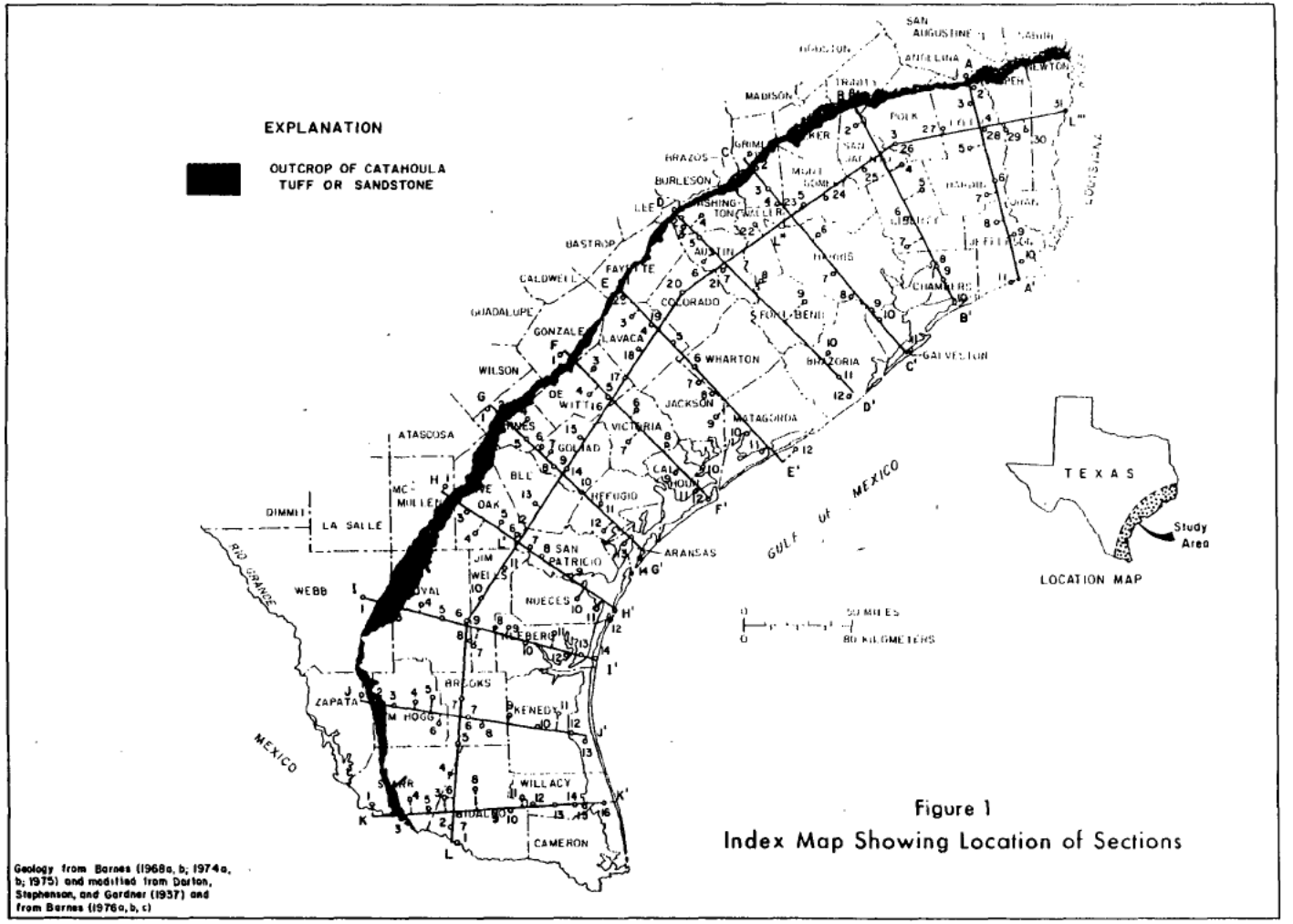


Figure 1
Index Map Showing Location of Sections

Geology from Barnes (1968a, b; 1974a, b; 1975) and modified from Darton, Stephenson, and Gardner (1937) and from Barnes (1976a, b, c)

subsurface correlations of the Catahoula-Fleming contact, as well as formation thicknesses, will continue to differ.

Burkeville Confining System

The Burkeville confining system, which was named by Wesselman (1967) for outcrops near the town of Burkeville in Newton County, Texas, is delineated on the sections from the Sabine River to near the Rio Grande. It separates the Jasper and Evangeline aquifers and serves to retard the interchange of water between the two aquifers.

The Burkeville has been mapped in this report as a rock-stratigraphic unit consisting predominantly of silt and clay. Boundaries were determined independently from time concepts although in some places the unit appears to possess approximately isochronous boundaries. In most places, however, this is not the case. For example, the entire thickness of sediment in the Burkeville confining system in some areas is younger than the entire thickness of sediment in the Burkeville in other places.

The configuration of the unit is highly irregular. Boundaries are not restricted to a single stratigraphic unit but transgress the Fleming-Oakville contact in many places. This is shown on sections D-D' to G-G' and J-J' (Figures 5-8 and 11). Where the Oakville Sandstone is present, the Burkeville crops out in the Fleming but dips gradually into the Oakville because of facies changes from sand to clay downdip.

The typical thickness of the Burkeville ranges from about 300 to 500 feet (91 to 152 m). However, thick sections of predominantly clay in Jackson and Calhoun Counties account for the Burkeville's gradual increase to its maximum thickness of more than 2,000 feet (610 m) as shown on section F-F' (Figure 7).

The Burkeville confining system should not be construed as a rock unit that is composed entirely of silt and clay. This is not typical of the unit, although examples of a predominance of silt and clay can be seen in some logs in sections H-H' and I-I' (Figures 9-10). In most places, the Burkeville is composed of many individual sand layers, which contain fresh to slightly saline water; but because of its relatively large percentage of silt and clay when compared to the underlying Jasper aquifer and overlying Evangeline, the Burkeville functions as a confining unit.

Evangeline Aquifer

The Evangeline aquifer, which was named and defined by Jones (Jones, Turcan, and Skibitzke, 1954) for a ground-water reservoir in southwestern Louisiana, has been mapped also in Texas, but heretofore has been delineated no farther west than Washington, Austin, Fort Bend, and Brazoria Counties. Its presence as an aquifer and its hydrologic boundaries to the west have been a matter of speculation. D. G. Jorgensen, W. R. Meyer, and W. H. Sandeen of the U.S. Geological Survey (written commun., March 1, 1976) recently refined the delineation of the aquifer in previously mapped areas and continued its delineation to the Rio Grande. The boundaries of the Evangeline as they appear on the sections in this report are their determinations.

The Evangeline aquifer has been delineated in this report essentially as a rock-stratigraphic unit. Although the aquifer is composed of at least the Goliad Sand, the lower boundary transgresses time lines to include sections of sand in the Fleming Formation. The base of the Goliad Sand at the outcrop coincides with the base of the Evangeline only in South Texas as shown in sections H-H' to K-K' (Figures 9-12). Elsewhere, the Evangeline at the surface includes about half of the Fleming outcrop. The upper boundary of the Evangeline probably follows closely the top of the Goliad Sand where present, although this relationship is somewhat speculative.

The Evangeline aquifer is typically wedge shaped and has a high sand-clay ratio. Individual sand beds are characteristically tens of feet thick. Near the outcrop, the aquifer ranges in thickness from 400 to 1,000 feet (122 to 305 m), but near the coastline, where the top of the aquifer is about 1,000 feet (305 m) deep, its thickness averages about 2,000 feet (610 m). The Evangeline is noted for its abundance of good quality ground water and is considered one of the most prolific aquifers in the Texas Coastal Plain. Fresh to slightly saline water in the aquifer, however, is shown to extend to the coastline only in section J-J' (Figure 11).

Chicot Aquifer

The Chicot aquifer, which was named and defined by Jones (Jones, Turcan, and Skibitzke, 1954) for a ground-water reservoir in southwestern Louisiana, is the youngest aquifer in the Coastal Plain of Texas. Over the years, the aquifer gradually was mapped westward from Louisiana into Texas where, heretofore, its most

westerly mapped limit was Austin, Fort Bend, and Brazoria Counties. In this report, the delineation of the Chicot was refined in previously mapped areas and extended to near the Rio Grande by D. G. Jorgensen, W. R. Meyer, and W. M. Sandeen of the U.S. Geological Survey (written commun., March 1, 1976).

It is believed that the base of the Chicot in some areas has been delineated on the sections in this report as the base of the Pleistocene. Early work in Southeast Texas indicates that the Chicot probably comprises the Willis Sand, Bentley Formation, Montgomery Formation, and Beaumont Clay of Pleistocene age and any overlying Holocene alluvium (Table 1). The problem that arises in this regard is that the base of the Pleistocene is difficult to pick from electrical logs. Thus any delineation of the base of the Chicot in the subsurface as the base of the Pleistocene is automatically suspect. At the surface, the base of the Chicot on the sections has been picked at the most landward edge of the oldest undissected coastwise terrace of Quaternary age. In practice, the delineation of the Chicot in the subsurface, at least on the sections in Southeast Texas, has been based on the presence of a higher sand-clay ratio in the Chicot than in the underlying Evangeline. In some places, a prominent clay layer was used as the boundary. Differences in hydraulic conductivity or water levels in some areas also served to differentiate the Chicot from the Evangeline.

The high percentage of sand in the Chicot in Southeast Texas, where the aquifer is noted for its abundance of water, diminishes southwestward. Southwest of section G-G' (Figure 8) the higher clay content of the Chicot and the absence of fresh to slightly saline water in the unit is sharply contrasted with the underlying Evangeline aquifer that still retains relatively large amounts of sand and good quality water.

TEXAS
WATER
DEVELOPMENT
BOARD

Report 178

GROUND-WATER DATA FOR HARRIS COUNTY, TEXAS VOLUME II RECORDS OF WELLS, 1892-1972

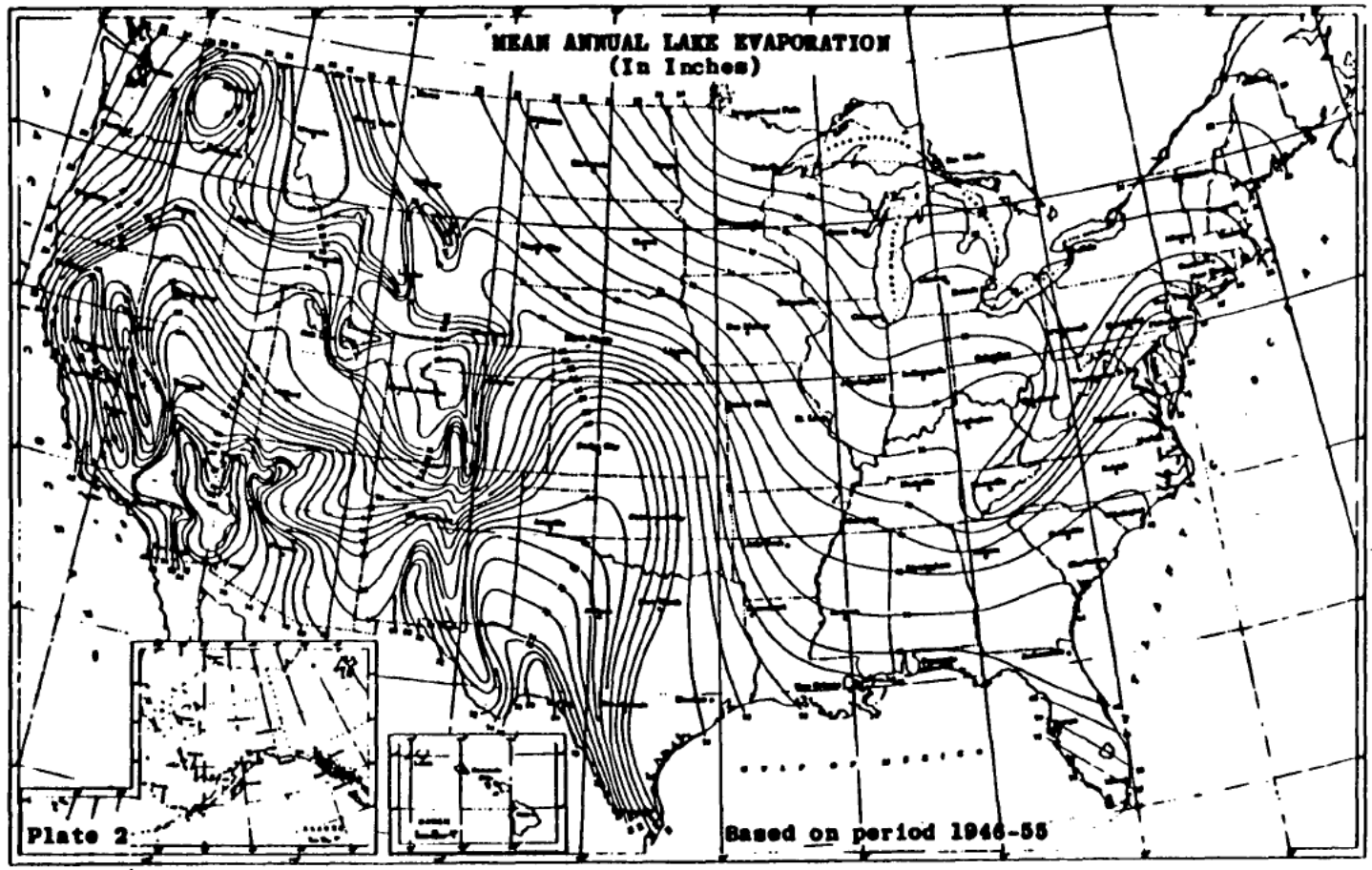
January 1974

No.	Owner	Driller	Date completed	Depth of well (ft.)	Casing: Diameter (in.)	Casing: Depth (ft.)	Water bearing unit	Altitude of land surface (ft.)	Water Level: Above (+) or below land surface datum (ft.)	Water Level: Date of measurement	Method of lift	Use of water	Remarks
*65-14-307	Tidwell School	A. Chrysty Kuhlmann	1962	384	4 2½	-- 384	CL	46	140	Feb. 1962	Sub.E 5	P	Screen from 358 to 384 ft.
308	Mrs. H. J. Williams	Lowry Water Wells	1963	151	4 2½	136 151	CU	46	105	July 1963	Sub.E ½	D	Screen from 136 to 151 ft. 2/
309	Charles Ketty	A and L Pump and Well Service	1963	70	2	63	CU	52	30	Sept. 1963	J,E ½	D	Open end. 2/
310	Sailey High School	B. J. Swinehart Co.	1964	475	6	475	CL	57	196	1964	Sub.E 10	P	35 ft. of screen between 392 and 469 ft. Reported yield 100 gpm with 11 ft. drawdown when drilled. 2/
* 401	City of Houston Northeast Well 8	Layne Texas Co.	1949	1,970	24 12	604 1,970	E	64	136.1 352.2	Mar. 24, 1950 Feb. 19, 1971	T,E	P	390 ft. of screen between 1,010 and 1,950 ft. Measured yield 2,950 gpm with 84 ft drawdown when drilled 1/
* 402	City of Houston Northeast Well 7	do	1949	1,901	24 12	601 1,901	E	61	141.7 352.7	Dec. 9, 1949 Feb. 12, 1971	T,E	P	417 ft. of screen between 1,001 and 1,880 ft. Measured yield 2,610 gpm with 50 ft. drawdown when drilled. 1/
* 403	City of Houston Northeast Well 6	do	1949	1,839	24 12	624 1,839	E	55	118.9 349.5	Nov. 13, 1949 Feb. 19, 1971	T,E	P	419 ft. of screen between 1,017 and 1,819 ft. Measured yield 2,690 gpm with 81 ft. drawdown when drilled. 1/
* 404	City of Houston Northeast Well 5	Texas Water Wells, Inc.	1949	1,980	24 12	625 1,980	E	50	139.3 332.3	Mar. 8, 1950 Feb. 26, 1969	T,E	P	400 ft. of screen between 1,060 and 1,960 ft. Measured yield 2,100 gpm with 38 ft. drawdown Jan. 5, 1951. 1/
* 405	City of Houston Northeast Well 4	do	1949	2,080	24 12	610 2,080	E	50	166.8 367.0	May 12, 1949 Feb. 16, 1971	T,E	P	405 ft. of screen between 1,030 and 2,060 ft. Measured yield 2,400 gpm with 62 ft. drawdown when drilled. 1/
* 406	City of Houston Northeast Well 3	Layne Texas Co.	1944	1,993	24 12	559 1,993	E	50	87.6 347.0	June 12, 1944 Feb. 11, 1971	T,E	P	267 ft. of screen between 1,143 and 1,970 ft. Measured yield 2,525 gpm with 68 ft. drawdown when drilled. Test hole drilled to 2,510 ft. 1/ 2/
407	Hunt-Wesson Foods, Inc. Well 3	do	1946	782	14 7	455 782	E,CL	53	145.3 253.1	Sept. 3, 1946 Feb. 6, 1968	T,E 50	Ind	115 ft. of screen between 164 and 767 ft. 3/
408	Hunt-Wesson Foods, Inc. Well 4	do	1948	1,022	14 8	655 1,022	E	52	180	Sept. 1948	T,E	Ind	154 ft. of screen between 680 and 1,012 ft. Reported yield 720 gpm with 68 ft. drawdown when drilled.
409	City of Houston Lindale Park Well 4	do	1947	1,152	16 8	546 1,152	E	66	218.8 289.0	June 13, 1956 Feb. 28, 1971	N	N	166 ft. of screen between 732 and 1,140 ft. Reported yield 1,040 gpm with 48 ft. drawdown when drilled. 1/
110	City of Houston	McMasters and Pomeroy	1945	1,100	10 8	878 1,100	E	62	100	May 1945	N	N	126 ft. of screen between 691 and 1,021 ft. Reported yield 560 gpm when drilled. Formerly Texas Water Co. well. Well destroyed.
411	Linder Lake	do	1947	752	6	752	E	64	--	--	N	N	Reported 80 ft. of screen. Formerly supplied swimming pool. Well destroyed.
112	City of Houston Lindale Park Well 3	do	1946	800	8 6 5	400 600 800	E	62	--	--	N	N	Reported 100 ft. of screen. Well destroyed.
* 413	Koppers Company, Inc. Well 1	do	--	666	8 6	622 666	E	64	57.7 271.7	Jan. 9, 1931 Feb. 25, 1970	N	N	Screen from 622 to 666 ft. 1/
* 414	Koppers Company, Inc. Well 2	do	1946	661	8 6	604 661	E	64	121.0 247.3 253.7	Feb. 7, 1946 Feb. 10, 1966 Feb. 9, 1967	N	N	Screen from 619 to 661 ft.

See footnotes at end of table

Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Asheville, N.C., 1979.

FIGURE 5
NORMAL ANNUAL TOTAL PRECIPITATION (INCHES)



Source: Climatic Atlas of the United States, U.S. Department of Commerce, National Climatic Center, Ashville, N.C., 1979.

FIGURE 4
MEAN ANNUAL LAKE EVAPORATION
(IN INCHES)

RECORD OF COMMUNICATION

[X] Phone Call [ ] Discussion [ ] Field Trip

[ ] Conference [ ] Other(Specify)

REF. 9

(Record of Item Checked Above)

TO: Robert Devillier
Storm Sewer Engineer
City of Houston Public Works, Houston, Texas

FROM: Bradley Morris FIT Geologist

DATE 6/24/87

TIME 4:25 PM

SUBJECT
Uses of Hunting Bayou, Houston, TX.

SUMMARY OF COMMUNICATION

Q. What are the uses for Hunting Bayou in Houston? Is there any use for surface water from the bayou?

A. Mr. Devillier verified that the principal use of the unimproved ditch was to transport rainfall runoff and treated sewage to the Houston ship channel. There are no reported uses of surface water supply intakes along this bayou within the study area.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

Jonathan Stewart for BJM.

INFORMATION COPIES
TO:

EPA Form 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 Which May Be Used Until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _X_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
TO: Dr. Herbert McKee Occupational Health City of Houston Health Dept/Engineering (713) 640-4399	From: Kelly Bowles, FIT Geologist	Date: 1/9/89 Time: 2:25 pm

SUBJECT: Buffalo Bayou/Houston Ship Channel

SUMMARY OF COMMUNICATION

Q: Do you know what Buffalo Bayou is used for?

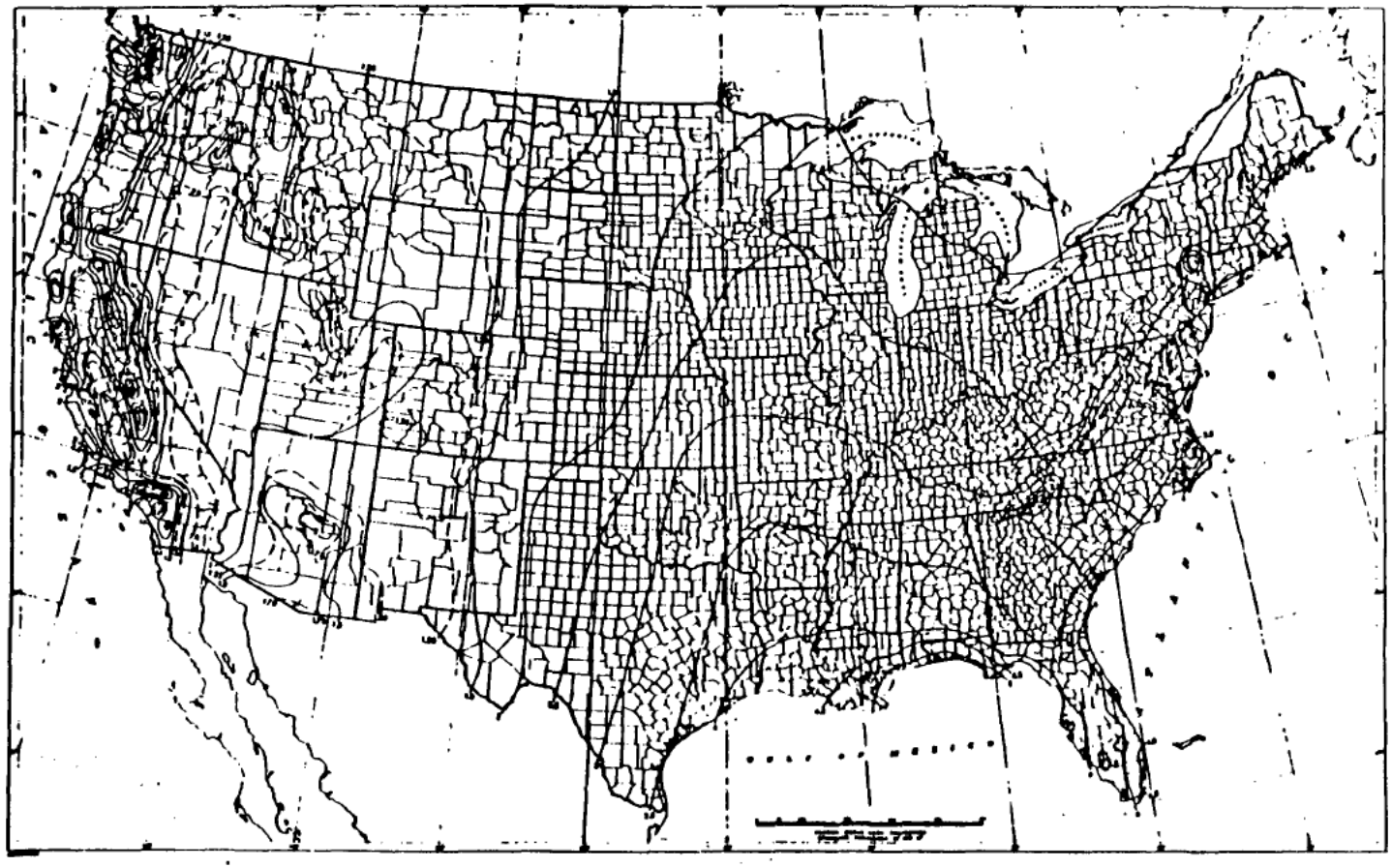
A: Buffalo Bayou is used for navigation and by industries along the channel for once through cooling water. There is no consumptive use and it is not used for drinking water.

Abridged from TXD008080715

CONCLUSIONS, ACTION TAKEN OR REQUIRED

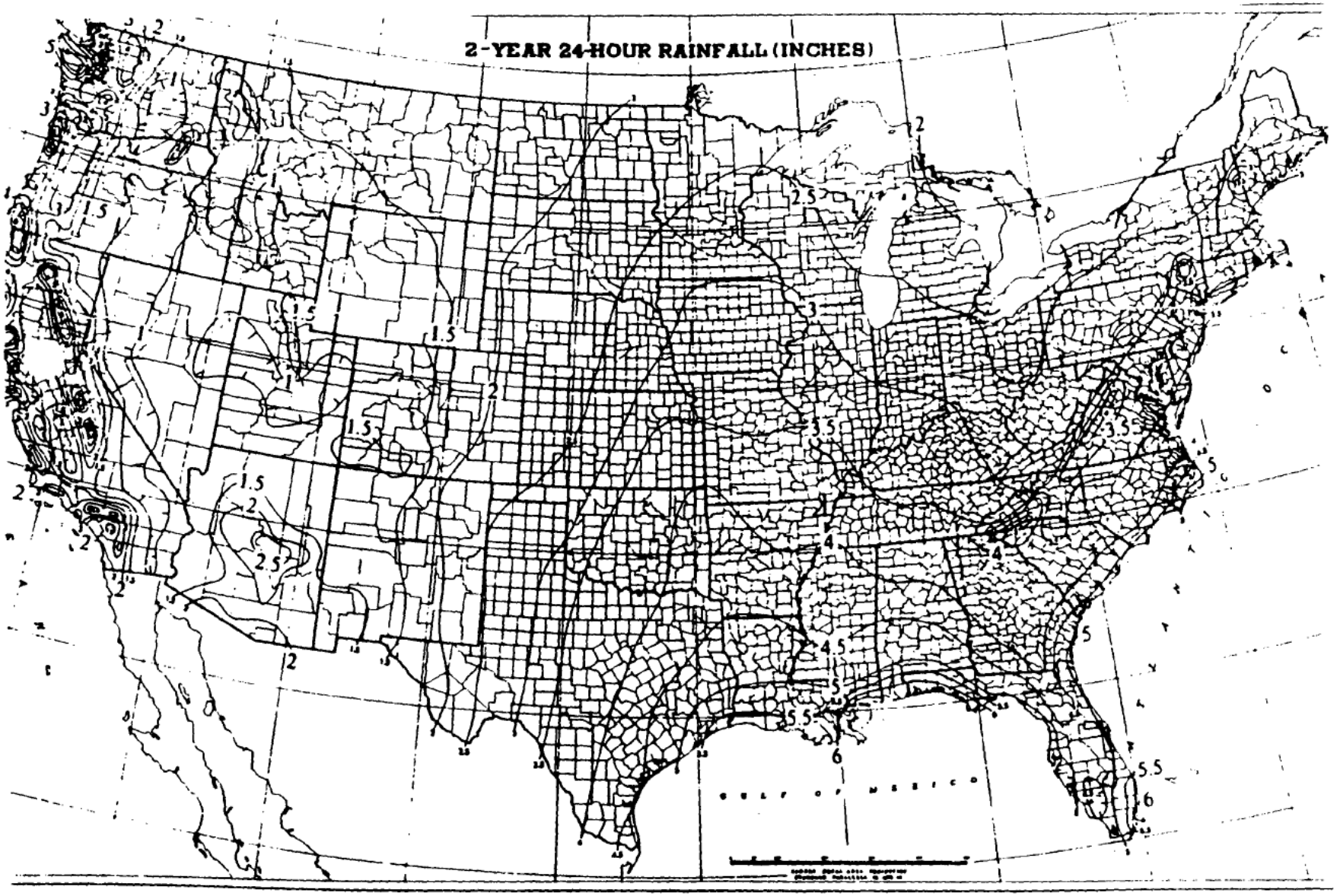
INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.



Source: Rainfall Frequency Atlas of the United States, Technical Paper No. 40, U.S. Department of Commerce, U.S. Government Printing Office, Washington, D.C., 1963.

FIGURE 8
1-YEAR 24-HOUR RAINFALL
(INCHES)


2-YEAR 24-HOUR RAINFALL (INCHES)
GULF OF MEXICO

RECORD OF COMMUNICATION	(Record of Item Checked Below) _X_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
To: Henry Flemming Technician ACOE Galveston District (409) 766-3076	From: Brian Boerner, FIT Chemist	Date: 1/10/89 Time: 1243

SUBJECT: Flood Plains of Houston

SUMMARY OF COMMUNICATION

Area around 800 N. Velasco is in zone C, which is out of the floodplain.

Information from FIRM; Map Panel #480296-0125-6, September 27, 1985.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

RECORD OF COMMUNICATION	(Record of Item Checked Below) _X_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
TO: Louis Bowen, Manager Groundwater Section, Public Works Dept. 105 Sabine Houston, Texas (713) 223-1095	From: Bradley Morris GIT Geologist	Date: 7/24/87 Time: 11:00 am

SUBJECT: Jensen Drive - Water Supplies

SUMMARY OF COMMUNICATION

Q. What percentage of the public water supply for the 3-mile area around Jensen Drive and Collingsworth is served by surface water and what percentage is served by groundwater? Which well supplies groundwater for this area? What aquifer is utilized?

A. The 3-mile study radius is served approximately 90% of the time by surface water from Lakes Conroe, Houston and Livingston (all three located outside study area). The 10% water supplies is suplied by the Northeast Water District Water Supply Well Numbers 4, 5, 6, 7. These four wells produce from the Evangeline aquifer at 1,500 to 2,000 foot depths.

Abridged from TXD 981602402

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

REF. 14

RECORD OF COMMUNICATION	(Record of Item Checked Below) _X_Phone Call ___Discussion ___Field Trip ___Conference ___Other(Specify)	
TO: Don MacInnes, Houston Public Works Water Production Office 105 Sabine, Houston, TX (713) 227-6558	From: Kelly Bowles, FIT Geologist Kelly Bowles	Date: 1/5/89 Time: 1:00 pm

SUBJECT: Ground Water and Surface Water Use - City of Houston

SUMMARY OF COMMUNICATION

Q. Where does the public water supply for the study area in the City of Houston come from?

A. Drinking water for that area is a mixture of surface water and ground water. Surface water comes from Lake Houston, 17 miles north. Ground water comes from City of Houston water supply wells, four of which are located within four miles of your area of concern: Central #19, Central #20, Central #21 and Scott Street #6. Approximately 60% comes from surface water and 40% from groundwater (see attachment).

Q: What are the uses of Buffalo Bayou?

A. Buffalo Bayou is primarily a storm sewer outlet with limited recreational uses - such as canoeing. There is no surface water withdrawn from Buffalo Bayou for public water supply use in the City of Houston. It is not used for irrigation either.

CONCLUSIONS, ACTION TAKEN OR REQUIRED

INFORMATION COPIES
TO:

EPA FORM 1300-6 (7-72)
Replaces EPA HQ Form 5300-3 which may be used until Supply is Exhausted.

Uncontrolled Hazardous Waste Site Ranking System

A Users Manual
(HW-10)

Originally Published in
the July 16, 1982, *Federal Register*

United States
Environmental Protection
Agency

1984

Dangerous Properties of Industrial Materials

Sixth Edition

N. IRVING SAX

Assisted by:

Benjamin Feiner/Joseph J. Fitzgerald/Thomas J. Haley/Elizabeth K. Weisburger

VNR VAN NOSTRAND REINHOLD COMPANY

NEW YORK CINCINNATI TORONTO LONDON MELBOURNE

CADMIUM COMPOUNDS

NIOSH #: EV 0260000

TOXICITY DATA: 3 CODEN:
ihl-hmn TCLo:1500 ug/m3/14Y-I:CARC ANYAA9 271,273,76

Toxicology Review: STEVA8 2(4),341,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: An exper CARC. The oral toxicity of Cd and its compounds is HIGH. However, when these materials are ingested, the irr and emetic action is so violent that little of the Cd is absorbed and fatal poisoning does not as a rule ensue. Cases of human Cd poisoning have been reported from ingestion of food or beverages prepared or stored in Cd-plated containers. The inhal of fumes or dusts of Cd primarily affects the respiratory tract; the kidneys may also be affected. Even brief exposure to high conc may result in pulmonary edema and death. Usually the edema is not massive, with little pleural effusion. In fatal cases, fatty degeneration of the liver and acute inflammatory changes in the kidneys have been noted. Ingestion of Cd results in a gastrointestinal type of poisoning resembling food poisoning in its symptoms. Inhal of dust or fumes may cause dryness of the throat, cough, headache, a sense of constriction in the chest, shortness of breath (dyspnea) and vomiting. More severe exposure results in marked lung changes, with persistent cough, pain in the chest, severe dyspnea and prostration which may terminate fatally. X-ray changes are usually similar to those seen in broncho-pneumonia. The urine is frequently dark. These symptoms are usually delayed for some hours after exposure, and fatal conc may be breathed without sufficient discomfort to warn the workman to leave the exposure. There is some evidence of teratogenicity. Ingestion of Cd results in sudden nausea, salivation, vomiting and diarrhea and abdominal pain and discomfort. Symptoms begin almost immediately after ingestion. A yellow discoloration of the teeth has been reported in workers exposed to Cd. Cadmium oxide fumes can cause metal fume fever resembling that caused by zinc oxide fumes.

CADMIUM DIAMIDE

mf: CdH_4N_2; mw: 144.45

Incomp: Self-explodes (water).

CADMIUM DIAZIDE

mf: CdN_6; mw: 196.44

Incomp: Explodes violently.

CADMIUM DICYANIDE

mf: C_2CdN_2; mw: 164.44

Incomp: Magnesium.

CADMIUM (II) EDTA COMPLEX

CAS RN: 15954913 NIOSH #: AH 4060000

SYN: (ETHYLENEDINITRILO)TETRAACETIC ACID CADMIUM (II) COMPLEX

TOXICITY DATA: 3 CODEN:
ipr-mus LD50:7800 ug(Cd)/kg PABIAQ 11,853,63

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

THR: HIGH ipr. See also cadmium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x and Cd.

CADMIUM FLUOBORATE

CAS RN: 14486192 NIOSH #: EV 0525000
mf: B_2CdF_8; mw: 286.02

SYN: FLUOROBORATE

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:250 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:650 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH orl. MOD ihl. See fluoborates.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

For further information see Fluoroborate Vol. 2, No. 3 of *DPIM Report.*

CADMIUM FLUORIDE

CAS RN: 7790796 NIOSH #: EV 0700000
mf: CdF_2; mw: 150.40

Cubic white crystals. mp: 1100°, bp: 1758°, d: 6.64, vap. press: 1 mm @ 1112°.

SYN: CADMIUM FLUORURE (FRENCH)

TOXICITY DATA: 3 CODEN:
scu-frg LDLo:280 mg/kg CRSBAW 124,133,37

Toxicology Review: AMSSAQ 400,5,63. OSHA Standard: Air: TWA 200 ug(Cd)/m3; CL 600 (SCP-W) FEREAC 39,23540,74. Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: HIGH via scu route. Violent reaction with K. See fluorides and cadmium compounds.

Disaster Hazard: When heated to decomp it emits very tox fumes of Cd and F^-.

CADMIUM FLUOSILICATE

CAS RN: 17010218 NIOSH #: EV 0875000
mf: CdF_6Si; mw: 254.49

Hexagonal, colorless crystals.

SYN: TL 1070

TOXICITY DATA: 3 CODEN:
orl-rat LDLo:100 mg/kg NCNSA6 5,27,53
ihl-mus LCLo:670 mg/m3/10M NDRC** No.9-4-1-19,44

Occupational Exposure to Cadmium recm std: Air: TWA 40 ug/m3; CL 200 ug/m3/15M NTIS**.

CHROMIC ACID (MIXTURE)

NIOSH #: GB 2650000

mf: CrO_3; mw: 100.01

mp: 196°; d: 2.70; dark red cryst; decomp @ 250° to $Cr_2O_3 + O_2$; a powerful oxidizer. Water sol.

SYNS:
CHROMIUM TRIOXIDE
CHROMIC ANHYDRIDE

TOXICITY DATA: CODEN:
DOT: Oxidizer, Label: Oxidizer FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: A poison. See also chromium compounds and chromates. A powerful irr of skn, eyes and mu mem; can cause a dermatitis, bronchoasthma, "chrome holes," damage to the eyes.

Disaster Hazard: May explode in a fire.

Incomp: Acetic acid; acetic anhydride; tetrahydronaphthalene; acetone; alcohols; alkali metals; ammonia; arsenic; bromine penta fluoride; butyric acid; n,n-dimethylformamide; hydrogen sulfide; peroxyformic acid; phosphorus; potassium hexacyanoferrate; pyridine; selenium; sodium; sulfur.

CHROMIC ACID (SOLUTION)

NIOSH #: GB 2670000

SYN: CHROMIC ACID SOLUTION (DOT)

TOXICITY DATA: 3 CODEN:
DOT: Corrosive Material, Label: Corrosive FEREAC 41,57018,76. Occupational Exposure to Cr(VI) recm std: Air: TWA 25 ug(Cr(VI))/m3;CL 50 ug/m3/15M NTIS**.

THR: See chromic acid, dry. See also chromium compounds.

CHROMIC CHLORIDE STEARATE

CAS RN: 15242963 NIOSH #: GB 7280000
mf: $C_{18}H_{36}Cl_4Cr_2O_3$; mw: 546.34

SYNS:
TETRACHLORO-MU-HYDROXY-(MU-OCTADECANOATO-O:O')DI-CHROMIUM
NCI-C60800
STEARATO-CHROMIC CHLORIDE COMPLEX
TETRACHLORO-MU-HYDROXY-(MU-STEARATO)DI-CHROMIUM

TOXICITY DATA: 3 CODEN:
ivn-mus LD50:180 mg/kg CSLNX* NX#03305

Reported in EPA TSCA Inventory, 1980.

THR: HIGH ivn. See also chromium compounds.

Disaster Hazard: When heated to decomp it emits tox fumes of Cl^-.

CHROMIC CHROMATE

CAS RN: 24613896 NIOSH #: GB 2850000
mf: $Cr_3O_{12}{\cdot}2Cr$; mw: 452.00

SYNS:
CHROMIC ACID, CHROMIUM (3+) SALT (3:2)
CHROMIUM CHROMATE

TOXICITY DATA: 3 CODEN:
imp-rat TDLo:112 mg/kg:NEO AIHAAP 20,274,59

Carcinogenic Determination: Animal Positive IARC** 2,100,73. Occupational Exposure to Chromium(VI) recm std: Air: CL 1 ug(Cr(VI))/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: An exper NEO, CARC. See also chromium compounds. Very powerful oxidizer.

CHROMITE (MINERAL)

CAS RN: 1308312 NIOSH #: GB 4000000
mf: Cr_2FeO_4; mw: 223.85

SYNS:
CHROME ORE
CHROMITE ORE
IRON CHROMITE

TOXICITY DATA: 3 CODEN:
Carcinogenic Determination: Indefinite IARC** 23,-205,80.

THR: See also chromium compounds and iron. An exper ± CARC.

CHROMIUM

CAS RN: 7440473 NIOSH #: GB 4200000
Af: Cr; Aw: 52.0

SYN: CHROME

TOXICITY DATA: CODEN:
ivn-rat TDLo:2160 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rat TDLo:1200 ug/kg/6W-I TFX:ETA JNCIAM 16,447,55
imp-rbt TDLo:75 mg/kg:ETA ZEKBAI 52,425,42

Carcinogenic Determination: Animal Suspected IARC** 2,100,73; Animal Indefinite IARC** 23,205,80. TLV-TWA 500 ug/m3 DTLVS* 4,98,80. *Toxicology Review:* 85CVA2 5,63,70; KOTTAM 11(11),1300,75; FOREAE 7,313,42; MIBUBI 9(4),321,75; FCTXAV 9,105,71; PEXTAR 12,102,69; 85DHAX Cr,22,74; BNYMAM 54,413,78; NTIS** Conf-691001. OSHA Standard: Air: TWA 1 mg/m3 (SCP-0) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 1 152,182, VOL 3; S323,352, VOL 5 173#. NIOSH Current Intelligence Bulletin 4, 1975. Reported in EPA TSCA Inventory, 1980. Proposed OSHA Medical Records Rules FEREAC 47,30420,82.

THR: An exper ETA, CARC.

Disaster Hazard: Powder will explode spont in air.

Incomp: Oxidants.

For further information see Vol. 3, No. 3 of *DPIM Report.*

CHROMIUM ACETATE HYDRATE

CAS RN: 628524 NIOSH #: AG 3000000
mf: $C_4H_6CrO_4{\cdot}H_2O$; mw: 188.12

Red crystals.

SYNS:
1-DODECANETHIOL
M-DODECYL MERCAPTAN
1-DODECYL MERCAPTAN
M-LAURYL MERCAPTAN
1-MERCAPTODODECANE
NCI-C60935

TOXICITY DATA: CODEN:
cyt-rat-ihl 5020 ug/m3/16W BZARAZ 27,102,74

Reported in EPA TSCA Inventory, 1980.
THR: See mercaptans. MUT data.
Fire Hazard: Low.
To Fight Fire: Alcohol foam.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

LAURYLPYRIDINIUM LAURYLXANTHATE

CAS RN: 14917965 NIOSH #: UU 5775000
mf: $C_{17}H_{30}N \cdot C_{13}H_{25}OS_2$; mw: 509.98

TOXICITY DATA: 2 CODEN:
skn-rbt 500 mg/24H MOD 28ZPAK -,174,72
eye-rbt 20 mg/24H SEV 28ZPAK -,174,72
orl-rat LD50:802 mg/kg 28ZPAK -,174,72

THR: MOD orl. A skn, eye irr.
Disaster Hazard: When heated to decomp it emits very tox fumes of NO_x and SO_x.

LAURYL SULFATE, SODIUM SALT, CONDENSED WITH 3 MOLES OF ETHYLENE OXIDE

NIOSH #: OF 5725000

SYNS:
SODIUM SALT OF SULFATED BROAD-CUT COCONUT ETHOXY(3EO) ALCOHOL
SODIUM SALT OF SULFATED ETHOXYLATE OF BROAD-CUT LAURYL ALCOHOL

TOXICITY DATA: 2 CODEN:
skn-rbt 10 mg MLD JSCCA5 22,411,71
skn-rbt 230 mg/5W open MLD JSCCA5 22,411,71
skn-gpg 115 mg/5W open MLD JSCCA5 22,411,71

THR: A skn irr.
Disaster Hazard: When heated to decomp it emits tox fumes of SO_x.

LAVANDIN OIL

CAS RN: 8022159 NIOSH #: OF 6097500

Main constituent is Linalool; found in plant Lavanoula Hybrida Reverchon; prepared by steam distillation of the flowering stalks of the plant.

SYN: OIL OF LAVANDIN

TOXICITY DATA: 2 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76

Reported in EPA TSCA Inventory, 1980.
THR: A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVATAR

NIOSH #: OF 6097840

Coal tar distillates in a shampoo base.

TOXICITY DATA: CODEN:
mma-sat 25 ug/plate TOLED5 3,325,79

THR: MUT data.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER ABSOLUTE

NIOSH #: OF 6100000

Found in the flowers of Lavandula Officinalis chaix. The main constituent is Linalyl Acetate; prepared from alcoholic extract of a residue, which is extracted from plant material using an organic solvent; a dark green liquid.

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:4250 mg/kg FCTXAV 14(5),443,76

THR: LOW orl; A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LAVENDER OIL

CAS RN: 8000280 NIOSH #: OF 6110000

Main constituent is linalyl acetate. Found in the plant Lavandulaofficinalif choix (Fam. Labiate). Prepared by steam distillation of the flowering stalks of the plant.

SYNS:
LAVENDEL OEL (GERMAN)
OIL OF LAVENDER

TOXICITY DATA: 1 CODEN:
skn-rbt 500 mg/24H MLD FCTXAV 14,443,76
orl-rat LD50:9040 mg/kg PHARAT 14,435,59

Reported in EPA TSCA Inventory, 1980.
THR: LOW orl. A skn irr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

LD-813

CAS RN: 64083052 NIOSH #: OF 6730000

Commercial mixture of aromatic amines containing approx. 40% MOCA

TOXICITY DATA: 3 CODEN:
orl-rat TDLo:37 gm/kg/2Y-C:CARC TXAPA9 31,159,75

THR: An exper CARC. See also aromatic amines.
Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

LEAD

CAS RN: 7439921 NIOSH #: OF 7525000
mf: Pb; mw: 207.19

Bluish-gray, soft metal. mp: 327.43°, bp: 1740°, d: 11.4 @ 20°/4°. vap. press: 1 mm @ 973°.

SYNS:
C.I. 77575
LEAD FLAKE
LEAD S2
OLOW (POLISH)

TOXICITY DATA: 3	CODEN:
orl-rat TDLo:790 mg/kg (MGN)	AEHLAU 23,102,71
orl-rat TDLo:1140 mg/kg (14D pre-21D post)	PHMCAA 20,201,78
orl-mus TDLo:1120 mg/kg (MGN)	AEHLAU 23,102,71
orl-mus TDLo:6300 mg/kg (1-21D preg)	EXPEAM 31,1312,75
orl-mus TDLo:12600 mg/kg (1-21D preg)	EXPEAM 31,1312,75
orl-mus TDLo:4800 mg/kg (1-16D preg)	BECTA6 18,271,77
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXPEAM 25,56,69
orl-dom TDLo:662 mg/kg (1-21W preg)	TXAPA9 25,466,73
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXPEAM 25,56,69
orl-wmn TDLo:450 mg/kg/6Y:CNS	JAMAAP 237,2627,77
ipr-rat LDLo:1000 mg/kg	EQSSDX 1,1,75
orl-pgn LDLo:160 mg/kg	HBAMAK 4,1289,35

Carcinogenic Determination: Indefinite IARC** 23, 325,80.

TLV: AIR: 0.15 mg/m3 DTLVS* 4,243,80; *Toxicology Review:* TRBMAV 33(1),85,75; PGMJAO 51(601),783,75; JDSCAE 58(12),1767,75; IRXPAT 12,1,73; CTPHBG 55,147,71; CTOXAO 6(3),377,73; QURBAW 7(1),75,74; RREVAH 54,55,75; JAVMA4 164(3),277,74; AEMBAP 40,239,73; CTOXAO 5(2),151,72; FOREAE 7,313,42; KOTTAM 11(11),1300,75; GEIGAI 20(3),291,73; STEVA8 2(4),341,74; CLCHAU 19,361,73; AJMEAZ 38,409,65; 85DHAX PB,254,72; PDTNBH 6,204,77; AMTODM 3,209,77. OSHA Standard: Air: TWA 200 ug/m3 (SCP-O) FEREAC 39,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. "NIOSH Manual of Analytical Methods" VOL 1 102,191,195,200,208,214,262, VOL 3 S341. Reported in EPA TSCA Inventory, 1980.

THR: See lead compounds. A hmn CNS. HIGH orl; MOD irr. A common air contaminant. It is a ± CAR of the lungs and kidney and an exper TER.

Fire Hazard: Mod, in the form of dust when exposed to heat or flame. See also powdered metals.

Explosion Hazard: Mod, in the form of dust when exposed to heat or flame.

Incomp: NH_4NO_3, ClF_3, H_2O_2, NaN_3, Na_2C_2, Zr. disodium acetylide; oxidants.

Disaster Hazard: Dangerous; when heated, emits highly tox fumes; can react vigorously with oxidizing materials.

For further information see Vol. 1, No. 1 of *DPIM Report.*

LEAD ACETATE

CAS RN: 301042 NIOSH #: AI 5250000
mf: $C_4H_6O_4 \cdot Pb$; mw: 325.29

Trihydrate, colorless crystals or white granules or powder. Slightly acetic odor; slowly effloresces; d: 2.55; mp: 75° when rapidly heated. Decomp above 200°; very sol in glycerol. Keep well closed.

SYNS:

ACETIC ACID LEAD (2+) SALT
ACETATE DE PLOMB (FRENCH)
BLEIACETAT (GERMAN)
LEAD (2+) ACETATE
LEAD(II) ACETATE
LEAD DIACETATE
LEAD DIBASIC ACETATE
NORMAL LEAD ACETATE
PLUMBOUS ACETATE
SALT OF SATURN
SUGAR OF LEAD

TOXICITY DATA: 3	CODEN:
dns-rat-ipr 50 ug/kg	PSEBAA 143,446,73
spm-mus-par 1 gm/kg	ARTODN 46,159,80
orl-rat TDLo:7854 mg/kg (6-16D preg)	FCTXAV 13,629,75
orl-rat TDLo:1800 mg/kg (1-22D preg/14D post)	TOLED5 7,373,80
orl-rat TDLo:113 gm/kg (70D pre-21D post)	PBBHAU 8,347,78
orl-mus TDLo:3150 mg/kg (1-21D preg)	CRSBAW 170,1319,76
orl-mus TDLo:4800 mg/kg (1-8D preg)	CRSBAW 172,1037,78
orl-mus TDLo:9 gm/kg (7-21D preg)	CRSBAW 170,1319,76
ipr-mus TDLo:35 mg/kg (8D preg)	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
ivn-ham TDLo:50 mg/kg (8D preg)	EXPEAM 25,56,69
ipr-pgn LDLo:150 mg/kg	ARTODN 46,265,80
cyt-hmn:lym 1 mmol/L/24H	TXCYAC 10,67,78
cyt-mus-orl 16800 mg/kg/4W	JTEHD6 2,619,77
cyt-mky-orl 5760 mg/kg/64W	MUREAV 45,77,77
ipr-mus TDLo:15 mg/kg/(8D preg):TER	BIMDB3 30,223,79
ivn-ham TDLo:50 mg/kg/(8D preg):TER	EXMPA6 7,208,67
orl-rat TDLo:250 gm/kg/47W-C:ETA	BJCAAI 16,283,62
ipr-rat LDLo:204 mg/kg	JPETAB 38,161,30
ipr-mus LD50:120 mg/kg	COREAF 256,1043,63
orl-dog LDLo:300 mg/kg	HBAMAK 4,1289,35
scu-dog LDLo:80 mg/kg	HBAMAK 4,1289,35
ivn-dog LDLo:300 mg/kg	EQSSDX 1,1,75
scu-cat LDLo:100 mg/kg	HBAMAK 4,1289,35
scu-rbt LDLo:300 mg/kg	HBAMAK 4,1289,35
ivn-rbt LDLo:50 mg/kg	EQSSDX 1,1,75
scu-frg LDLo:1600 mg/kg	HBAMAK 4,1289,35

Carcinogenic Determination: Animal Positive IARC** 23,325,80; Human Suspected IARC** 23,325,80. *Toxicology Review:* ADTEAS 5,51,72; ENVRAL 13,36,77; 85DHAX Pb,256,72. OSHA Standard: Air: TWA 200 ug(Pb)/m3 (SCP-O) FEREAC 29,23540,74. Occupational Exposure to Inorganic Lead recm std: Air: TWA 0.10 mg(Pb)/m3 NTIS**. Reported in EPA TSCA Inventory, 1980.

THR: MUT data. An exper + CARC, TER, ETA. A susp hmn CARC; HIGH ipr, orl, scu, ivn. See also lead compounds. A poison. An insecticide.

Disaster Hazard: When heated to decomp it emits tox fumes of Pb.

Incomp: $KBrO_3$; acids, sol sulfates, citrates, tartrates, chlorides, carbonates, alkalies, tannin phosphates, resorcinol, salicylic acid, phenol, chloral hydrate, sulfites, vegetable infusions, tinctures.

For further information see Vol. 1, No. 4 of *DPIM Report.*

LEAD ACETATE, BASIC

CAS RN: 1335326 NIOSH #: OF 8750000
mf: $C_4H_{10}O_8Pb_3$; mw: 807.71

Disaster Hazard: Dangerous; shock will explode it; when heated, burns and emits acrid fumes; can react on contact with oxidizing materials.

NAPHTHA, COAL TAR

CAS RN: 8030306 NIOSH #: QI 9450000

Dark straw-colored to colorless liquid. Sol in benzene, toluene, xylene, etc. bp: 149°-216°, flash p: 107°F (CC), d: 0.862-0.892, autoign. temp.: 531°F.

SYNS:

BENZIN
160 DEGREE BENZOL
COAL TAR NAPHTHA DISTILLATE
LIGHT LIGROIN
NAFTA (POLISH)
NAPHTHA
NAPHTHA, PETROLEUM
PETROLEUM BENZIN
PETROLEUM NAPHTHA

TOXICITY DATA: 2	CODEN:
ihl-rat LCLo:1600 ppm/6H	CHINAG 17,1078,39

TLV: Air: 300 ppm DTLVS* 4,433,80. OSHA Standard: Air: TWA 100 ppm (SCP-G) FEREAC 39,23540,74. "NIOSH Manual of Analytical Methods" VOL 2 S86. Reported in EPA TSCA Inventory, 1980.

THR: MOD via inhal route. Can cause unconsciousness which may go to coma, stentorious breathing and bluish tint to the skin. Recovery follows removal from exposure. In mild form, intoxication resembles drunkenness. On a chronic basis no true poisoning; sometimes headache, lack of appetite, dizziness, sleeplessness, indigestion and nausea. A common air contaminant. See oils, mineral.

Fire Hazard: Mod, when exposed to heat or flame; can react with oxidizing materials. Keep containers tightly closed.

Explosion Hazard: Slight.

To Fight Fire: Foam, CO_2, dry chemical.

alpha-NAPHTHAL

CAS RN: 66773 NIOSH #: QJ 0175000

TOXICITY DATA: 3	CODEN:
scu-dog LDLo:330 mg/kg	ZMWIAJ 19,545,1881

Reported in EPA TSCA Inventory, 1980.

THR: HIGH scu.

NAPHTHALENE

CAS RN: 91203 NIOSH #: QJ 0525000

mf: $C_{10}H_8$; mw: 128.18

Aromatic odor, white, crystalline, volatile flakes. mp: 80.1°, bp: 217.9°, flash p: 174°F (OC), d: 1.162, lel = 0.9%, uel = 5.9%, vap. press: 1 mm @ 52.6°, vap. d: 4.42. Autoign temp: 1053°F (567°C); sol in alc, benzene. Insol in water; very sol in ether, CCl_4, CS_2 hydronaphthalenes, in fixed and volatile oils.

SYNS:

CAMPHOR TAR
MOTH BALLS
MOTH FLAKES
NAFTALEN (POLISH)
NAPHTHALINE
NAPHTHENE
NCI-C52904
TAR CAMPHOR
WHITE TAR

TOXICITY DATA: 3	CODEN:
ipr-rat TDLo:5925 mg/kg (1-15D preg)	TXAPA9 48,A35,79
skn-rbt 495 mg open MLD	UCDS** 1/11/68
eye-rbt 100 mg MLD	BIOFX* 16-4/70
scu-rat TDLo:3500 mg/kg/12W-I:ETA	APAVAY 329,141,56
orl-chd LDLo:100 mg/kg	28ZRAQ -,228,60
unk-man LDLo:74 mg/kg	85DCAI 2,73,70
orl-rat LD50:1780 mg/kg	BIOFX* 16-4/70
ipr-mus LD50:150 mg/kg	NTIS** AD691-490
scu-mus LD50:969 mg/kg	TOIZAG 20(5/6),772,73
ivn-mus LD50:100 mg/kg	CSLNX* NX#00203
orl-dog LDLo:400 mg/kg	HBAMAK 4,1289,35
orl-cat LDLo:1000 mg/kg	HBAMAK 4,1289,35
orl-rbt LDLo:3 gm/kg	HBAMAK 4,1289,35
orl-mam LD50:1000 mg/kg	FMCHA2 -,D213,80

Aquatic Toxicity Rating: TLm96:10-1 ppm WQCHM* 3,-,74. *TLV:* Air: 10 ppm DTLVS* 4,293,80. *Toxicology Review:* 38ZNAA 1(1),93,71; JOPDAB 59,1,61; 27ZTAP 3,30,69. OSHA Standard: Air: TWA 10 ppm (SCP-T) FEREAC 39,23540,74. DOT-ORM-A, Label: None FEREAC 41,57018,76. Currently Tested by NTR for Carcinogenesis by Standard Bioassay Protocol as of Sept 1980. "NIOSH Manual of Analytical Methods" VOL 3 S292. Reported in EPA TSCA Inventory, 1980.

THR: MOD orl and HIGH ipr, ivn. An exper ETA. May be used as an insecticide. Systemic reactions include nausea, headache, diaphoresis, hematuria, fever, anemia, liver damage, vomiting, convulsions and coma. Poisoning may occur by ing of large doses, inhal or skn absorption.

Fire Hazard: Mod, when exposed to heat or flame; reacts with oxidizing materials. Reacts violently with CrO_3.

Spontaneous Heating: No.

Explosion Hazard: Mod, in the form of dust, when exposed to heat or flame.

To Fight Fire: Water, CO_2, dry chemical.

Incomp: Dinitrogen pentaoxide.

1-NAPHTHALENEACETAMIDE

CAS RN: 86862 NIOSH #: QJ 0590000

mf: $C_{12}H_{11}NO$; mw: 185.24

SYNS:

NAPHTHALENE ACETAMIDE
ALPHA-NAPHTHALENEACETAMIDE
ALPHA-NAPHTHYLACETAMIDE
1-NAPHTHYLACETAMIDE

TOXICITY DATA: 2	CODEN:
orl-mam LD50:1000 mg/kg	FMCHA2 -,D143,75

Reported in EPA TSCA Inventory, 1980.

THR: MOD orl.

Disaster Hazard: When heated to decomp it emits tox fumes of NO_x.

1-NAPTHTALENEACETIC ACID

CAS RN: 86873 NIOSH #: QJ 0875000

mf: $C_{12}H_{10}O_2$; mw: 186.22

SYNS:
ISOAMYL PHENYLAMINOACETATE HYDROCHLORIDE
ISOPENTYL-2-PHENYLGLYCINATE HYDROCHLORIDE
3-METHYLBUTYL ALPHA-AMINOBENZENEACETATE HYDROCHLORIDE (±)-
PHENYLAMINOACETIC ACID ISOAMYL ESTER HYDROCHLORIDE
d,l-2-PHENYLGLYCINISOAMYLESTERHYDROCHLORID (GERMAN)

TOXICITY DATA: 3-2 CODEN:
orl-mus LD50:2600 mg/kg PHARAT 33,749,78
ipr-mus LD50:415 mg/kg PHARAT 30,765,75
ivn-mus LD50:77 mg/kg PHARAT 33,749,78

THR: HIGH ipr, ivn; MOD orl.
Disaster Hazard: When heated to decomp it emits very tox fumes of Cl^- and NO_x.

PHENANTHRA-ACENAPHTHENE

CAS RN: 7258915 NIOSH #: QI 9400000
mf: $C_{24}H_{16}$; mw: 304.40

SYN: 4,5-DIHYDRO-NAPHTHA(1,2-K)ACEPHENANTHRYLENE

TOXICITY DATA: 3 CODEN:
skn-mus TDLo:1250 mg/kg/52W-I:ETA PRLBA4 117,318,35

THR: An exper ETA via skn in mus.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE

CAS RN: 85018 NIOSH #: SF 7175000
mf: $C_{14}H_{10}$; mw: 178.24

Solid or monoclinic crystals. mp: 100°, bp: 339°, d: 1.179 @ 25°, vap. press: 1 mm @ 118.3°, vap. d: 6.14. Insol in water; sol in CS_2 benzene, hot alcohol; very sol in ether.

SYN: PHENANTHREN (GERMAN)

TOXICITY DATA: 3 CODEN:
dnd-sal:spr 3 gm/L BIPMAA 5,477,67
dnd-sal:tes 5 ug/1H-C BIJOAK 110,159,68
dnd-ham:kdy 5 mg/L BCPCA6 20,1297,71
mma-sat 100 ug/plate APSXAS 17,189,80
dnd-ham:fbr 5 mg/L/24H BCPCA6 20,1297,71
cyt-ham:lng 40 mg/L/27H MUREAV 66,277,79
sce-ham-ipr 900 mg/kg/24H MUREAV 66,65,79
sce-ham:fbr 10 umol/L JNCIAM 58,1635,77
skn-mus TDLo:71 mg/kg:NEO JNCIAM 50,1717,73
skn-mus TD:22 gm/kg/10W-I:ETA BJCAAI 10,363,56
orl-mus LD50:700 mg/kg HYSAAV 29,19,64
ivn-mus LD50:56 mg/kg CSLNX* NX#00190

"NIOSH Manual of Analytical Methods" VOL 1 206. Reported in EPA TSCA Inventory, 1980. EPA TSCA 8(a) Preliminary Assessment Information Proposed Rule FERREAC 45,13646,80.
THR: MUT data. An exper NEO, ETA. HIGH ivn. MOD orl. A hmn skn photosensitizer. A slight fire hazard.
To Fight Fire: water, foam, CO_2, dry chemical.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE-3,4-DIHYDRODIOL

NIOSH #: SF 7353100
mf: $C_{14}H_{12}O_2$; mw: 212.26

SYNS:
3,4-DIHYDROMORPHOL
3,4-DIHYDRO-3,4-PHENANTHRENEDIOL

TOXICITY DATA: 3 CODEN:
skn-mus TDLo:85 mg/kg:ETA CNREA8 39,4069,79

THR: An exper ETA.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENE EPOXIDE

NIOSH #: SF 7704500
mf: $C_{14}H_8O$; mw: 192.22

TOXICITY DATA: CODEN:
otr-ham:emb 5 mg/L CNREA8 32,1391,72

THR: MUT data.

9,10-PHENANTHRENE OXIDE

CAS RN: 585080 NIOSH #: SF 7352000
mf: $C_{14}H_{10}O$; mw: 194.24

Colorless needles; mp: 152°-153°; very slightly sol in water; very sol in alc, ether.

SYNS:
9,10-EPOXY-9,10-DIHYDROPHENANTHRENE
PHENANTHRENE-9,10-EPOXIDE
1A,9B-DIHYDROPHENANTHRO-(9,10-B)OXIRENE,(9CI)

TOXICITY DATA: 3 CODEN:
mma-sat 100 ug/plate MUREAV 66,337,79
skn-mus TDLo:40 mg/kg:ETA JNCIAM 39,1217,67

THR: MUT data. An exper ETA.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.

PHENANTHRENEQUINONE

CAS RN: 84117 NIOSH #: SF 7875000
mf: $C_{14}H_8O_2$; mw: 208.22

Orange needles; d: 1.405 @ 4°; mp: 206.5°-207.5°; bp: > 300° subl; very slightly sol in water; sol in hot alc, benzene; slightly sol in ether.

SYNS:
9,10-PHENANTHRAQUINONE
9,10-PHENANTHRENEQUINONE
9,10-PHENANTHRENEDIONE

TOXICITY DATA: 3 CODEN:
skn-mus TDLo:800 mg/kg/29W-C:ETA PIATA8 16,309,40
ipr-mus LDLo:165 mg/kg HBTXAC 5,110,59

Reported in EPA TSCA Inventory, 1980.
THR: An exper ETA. HIGH acute ipr.
Disaster Hazard: When heated to decomp it emits acrid smoke and fumes.